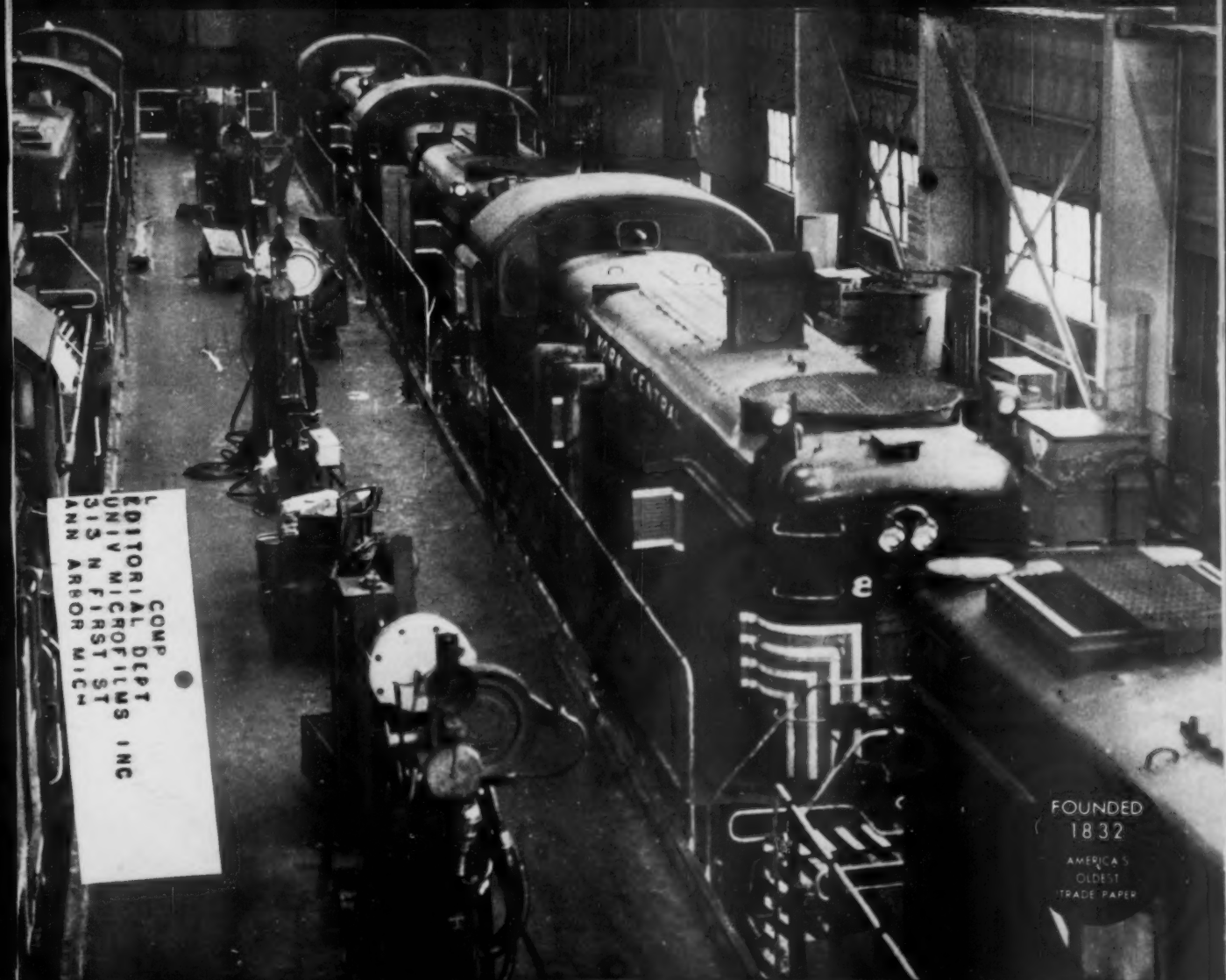
RAILWAY

LOCOMOTIVES AND CARS

JUNE 1961



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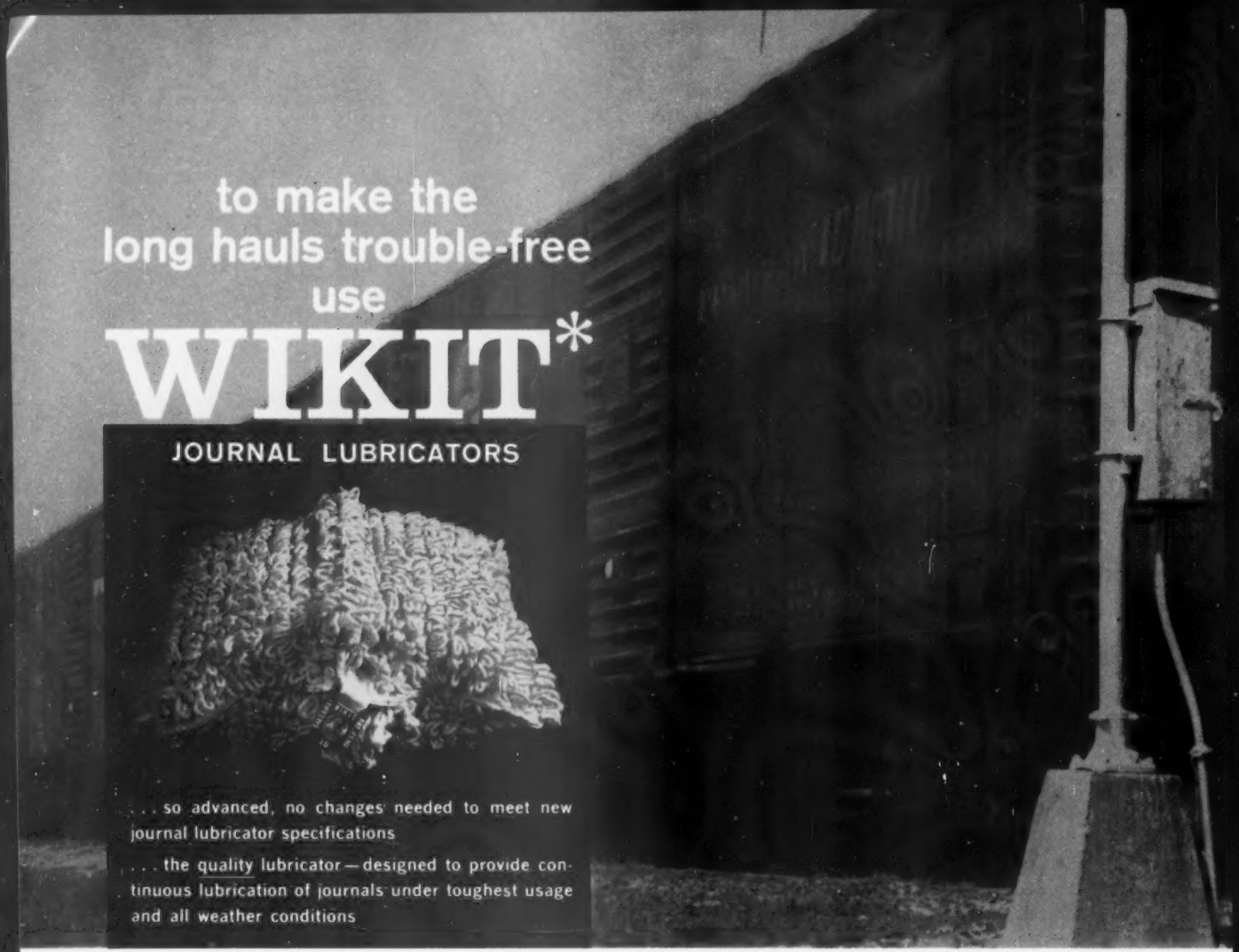

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LOCO-MOTIVES AND CARS

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REPORT FOR JUNE

Coordinated Mechanical Associations Meetings

Equipment displays on approximately a mile of track and a large indoor exhibit at the Hotel Sherman will be features of the September 1961 meetings of the Coordinated Mechanical Associations in Chicago. The separate meetings of the four groups—Air Brake, Car Department Officers, Locomotive Maintenance Officers, and Railway Fuel and Operating Officers Associations—will be held simultaneously at the Hotel Sherman from Monday, September 11, through Wednesday, September 13.

The equipment exhibits of the Allied Railway Supply Association will be held in the Exhibition Hall of the Sherman and at the 31st Street Yard of the Illinois Central along Chicago's lake front. Allied will operate buses from the hotel to the outdoor exhibit area.

L. P. Gangewere, president, Reading Co., will be the speaker at the luncheon honoring all railroad presidents to be held on Tuesday, September 12, in connection with the Coordinated meetings, the programs for which follow.

Air Brake Association

MONDAY, SEPTEMBER 11. *Address:* E. P. Gangewere, president, Reading Co. *Papers:* Air Brake Suppression of Locomotive Accelerated Slips—Ralph C. Ross, project engineer, New York Air Brake Co.; Techniques of Air Brake Maintenance—Pittsburgh Air Brake Club; Train Yard Air Brake Problems and Their Remedies—St. Louis Air Brake Club; Air Compressor Lubrication—K. Reyea, research and development engineer, Texaco Inc.; Wabcopac Brake Units—Westinghouse Air Brake Co.; Metropolitan Commuter Train Brake Equipment—Manhattan Air Brake Club.

TUESDAY, SEPTEMBER 12. Joint meeting with Locomotive Maintenance Officers Association. *Papers:* Tons per Operative Brake—Central Air Brake Club; Methods of Dynamic Interlock Application — H. MacPherson, supervisor air brakes, Canadian Pacific; Methods and Materials in Air Brake Pipe Joints—Dresser Manufacturing Div., Dresser Industries.

WEDNESDAY, SEPTEMBER 13. *Papers:* Automatic Train Operation—Montreal Air Brake Club; Vigilance and Safety Control—D. A. Wagner, air brake instructor, Baltimore & Ohio.

Car Department Officers

MONDAY, SEPTEMBER 11. *Address:* Spencer D. Moseley, president, General American Transportation Corp. *Committee reports:* AAR Loading Rules; Road-Rail Transportation; Interchange and Billing for Repairs to Cars and TOFC Trailers; Design, Maintenance and Upgrading Freight Car Equipment.

TUESDAY, SEPTEMBER 12. *Committee reports:* Light Repair Tracks and Train Yard Operation; Car Lubrication, with comments by W. M. Keller, vice-president (research), AAR.

WEDNESDAY, SEPTEMBER 13. *Committee reports:* Wheels, Axles, and Wheel Shop Practices, with film on Southern's automated wheel shop; Passenger Car Maintenance; Maintenance and Servicing of Mechanical Refrigerator Cars and TOFC Trailers; Painting.

A question and answer session on Rules of Interchange, Loading Rules, and other topics not covered in any of the committee

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TIME SAVING IDEAS FOR JUNE

DEPARTMENTS

reports, will again be held this year. This feature was instituted at last year's meeting.

Locomotive Maintenance Officers

MONDAY, SEPTEMBER 11. *Address:* C. N. Wiggins, Jr., assistant general manager, Louisville & Nashville. *Committee reports:* Diesel Engine Maintenance—Topic: New Economical Methods That Improve Service Life of Diesel Engines. Steam Generator and Water Treatment—Topic 1: New Simplified Control for Steam Generators; Topic 2: Steam Generator Rifled-Tube Performance. Shop Equipment—Topic: Modern Equipment and Methods for "Spot" Maintenance and Inspection of Locomotives.

TUESDAY, SEPTEMBER 12. *Address:* Edwin Butler, assistant director of locomotive inspection, Bureau Safety & Service, ICC. *Committee reports:* Diesel Mechanical Maintenance—Topic: Effect of New Type Brake Shoes on Locomotive Maintenance and Operation. Diesel Material Reconditioning and Control—Topic: Latest Practices in Economical Reclamation of Locomotive Parts.

WEDNESDAY, SEPTEMBER 13. *Committee reports:* Diesel Electrical Maintenance—Topic 1: New Ideas in Maintenance and Rebuilding of Traction Motors and Main Generators; Topic 2: Upgrading Control Equipment. Fuel and Lube Oil—Topic 1: Lube and Fuel Oil Filtration; Topic 2: Engine Sparking. New Developments in Motive Power Maintenance—Topic: mechanical department production control systems, or other recent developments in motive power maintenance.

Fuel and Operating Officers

MONDAY, SEPTEMBER 11. *Addresses:* J. C. Kenefick, general manager transportation, New York Central; P. C. White, director of supervisory training, Frisco. *Paper:* Safety—E. H. Hallmann, director of personnel, Illinois Central. *Panel discussions:* Loss and Damage Prevention, R. G. Norton (chairman), Norfolk & Western; Train Handling—G. Billingsley (chairman), general road foreman of engines, Missouri Pacific; Instructions on Handling of Trains with 24RL and 26 L Brakes—M. A. Davis (chairman), chief road foreman, Delaware & Hudson.

TUESDAY, SEPTEMBER 12. *Papers:* Duties and Responsibilities of Road Foreman—J. S. Swan, supervisor motive power utilization, Louisville & Nashville; Economical Utilization of Power—C. M. Machin, manager motive power operation, Baltimore & Ohio; New Electric Motive Power E-44—J. S. Lotz, assistant road foreman, Pennsylvania. *Panel discussions:* Economy in Use of Fuel Oil—A. H. Glass, chief power and fuel supervisor, Chesapeake & Ohio, and L. P. Parker, Gulf, Mobile and Ohio; Terminal Delays and Yard Operation—N. C. Sweetin (chairman), road foreman of equipment, Frisco.

WEDNESDAY, SEPTEMBER 13. *Paper:* EMD Advances Horsepower. *Panel discussion:* Diesel Failures, Causes and Remedies—D. J. McGillivray (chairman), Canadian National.

Lanterman Predicts Increase in Car Building

A total of 37,500 freight cars will be built in 1961, is the prediction of Joseph B. Lanterman, president, American Steel Foundries. Mr. Lanterman told New York security analysts that, by December, production should be at a rate of about 60,000 per year.

Since this prediction by Mr. Lanterman, Central of Georgia president W. E. Dillard has expressed fear that a "serious" shortage of freight cars may develop within 12 months as business continues to turn upward, and thinks that "those that possibly can see their way clear" should place orders now in order to be ready for rising shipper demands. To prevent a shortage on his own line, Mr. Dillard is augmenting the road's present fleet of 549 hoppers with the order for 75 covered hoppers listed below.

The *Burlington* includes in its 1961 freight-car program 250 70-ton insulated box cars with special loading devices. Cars to be built in company shops and completed for third quarter delivery.

The *Canadian Pacific* has ordered 450 box cars from Canadian Car and 700 from National Steel Car. Cars will be 50-ton, 41 ft 10 in. long, and have a capacity of 3,900 cu ft.

The *Central of Georgia* has ordered 75 roller-bearing covered hopper cars from Pullman-Standard at a cost of $1,011,900. Delivery now under way.

The *Great Northern* has ordered 20 2,600-cu ft Airslide covered hopper cars from General American for autumn delivery. 500 50-ft, 50-ton box cars being constructed in St. Cloud, Minn., shops. Cars to be equipped with roller-bearing trucks and combination 8-ft plug and 6-ft sliding doors. Plans also being made to rebuild 600 existing 40-ft box cars.

The *Maine Central* has ordered 200 50-ft box cars from Pullman-Standard at a cost of over $2,000,000. Cars being equipped with 9-ft aluminum doors, specially designed draft gear, and roller bearings. Delivery to begin this month.

The *Metropolitan Transit Authority* (Boston, Mass.) will soon request bids for an estimated 90 new subway cars. Fleet to replace existing rolling stock on Boston's Cambridge-Dorchester subway line.

The *New York Central* is completing specifications for 500 box cars to be built at its Despatch shops.

The *Norfolk Southern* has purchased 5 70-ton, 3,500-cu ft covered hoppers from American Car & Foundry at a cost of $11,700 each.

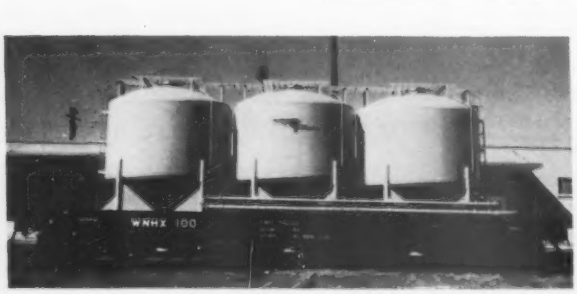
North American Car has begun delivery of 80 40-ft refrigerator cars to John Morrell & Co. An additional 100 cars will be built for Morrell during the third quarter of this year.

The *Northern Pacific* has authorized construction, in company shops, of 350 50½-ft box cars with 15-ft double doors, nailable steel flooring, and 50-ton roller-bearing trucks. Construction to start during fourth quarter. Order replaces 159 50-ft box cars and 200 40-ft box cars previously reported (RL&C, Dec. 1960, p 8).

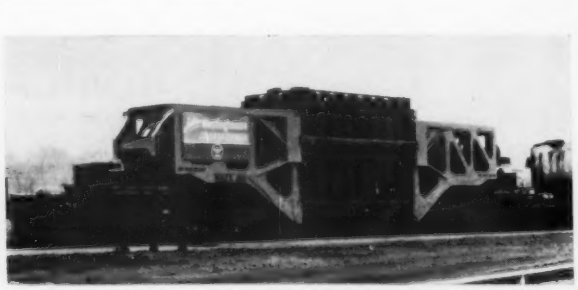
The *Passenger Service Improvement Corp.* of Philadelphia is asking bids for 26 air-conditioned, stainless-steel cars to be used in city-sponsored program. Cars to cost approximately $5,000,000. Each will accommodate 125 passengers.

The *Port of New York Authority* is expected to announce soon details of purchase of new commuter cars for lease to the New York Central, New Haven, and Long Island.

(Continued on page 46)



Pneumatically operated tank-type car with a capacity of 2,400 cu ft handles materials normally moved in covered hoppers. Developed by the Halliburton Co. of Duncan, Okla., for moving materials used in oil well cementing, the car has now been operated experimentally handling other granular and pelletized products. The special 70-ton car was built by Thrall. It is fitted with three standard Halliburton tear-drop shipped, 8,000-cu ft tanks piped for pneumatic loading and unloading. Load limit is 152,000 lb.



Two-section transformer car recently acquired by Westinghouse Electric Corp. has a capacity of 750,000 lb. The transformer becomes an integral part of the car structure and is nearly 5 in. above the rail. The car has two 6-wheel and two 4-wheel trucks. When moving unloaded, the two portions of the car are joined together, forming a unit 78 ft 6 in. long. This is the second of the type put into service by Westinghouse handling units produced by its Sharon, Pa., Transformer Division. The capacity of the first is 500,000 lb.

Machine operator, wheel shop foreman and Kennametal carbide engineer study ways to cut tooling costs.

Switch to KENDEX* "throw-away" inserts reduced tool costs 68%

After considerable study, the three-man team changed from conventional tooling to the new Kendex "throw-away" insert type tooling. A carefully developed tool cost comparison, kept by the user, showed a saving of 68% in favor of Kendex insert tooling.

These "turn-over" inserts, designed specially for wheel profiling, provide eight cutting edges. When one edge dulls, the insert is quickly turned—which brings a new, sharp cutting edge into the proper position without resetting the tool holder. When all edges are utilized, the insert is replaced, thereby eliminating costly regrinding.

A Kennametal* shim provides a solid seat for the insert—and when required, it permits the use of harder, more wear-resistant grades of Kennametal. Chipbreakers of Kennametal provide better chip control and eliminate chipbreaker grinding.

You can get this expert tooling service through your Kennametal carbide engineer. Thoroughly trained in carbide products, he devotes his time exclusively to the application of Kennametal hard carbides.

"There's Profit in Retiring a Tradition" is a booklet that contains facts on how other companies have reduced machining costs. Based on actual cases, it makes practical and profitable reading. Ask your Kennametal Carbide Engineer for a copy; and for Catalog RR259, "Railroad Wheel and Axle Tooling" . . . or write direct to KENNAMETAL INC., Dept. RLC, Latrobe, Pennsylvania.

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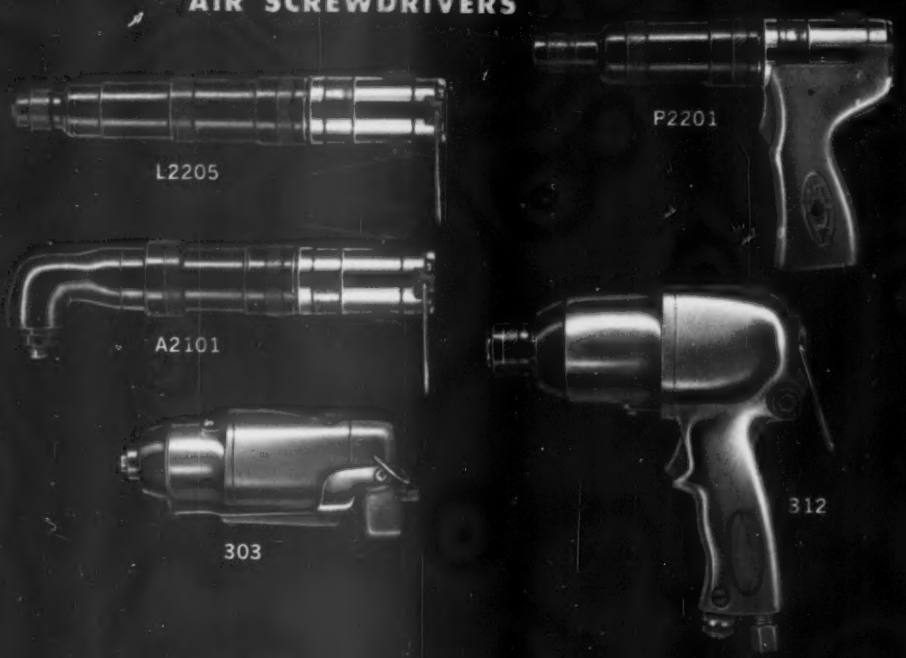

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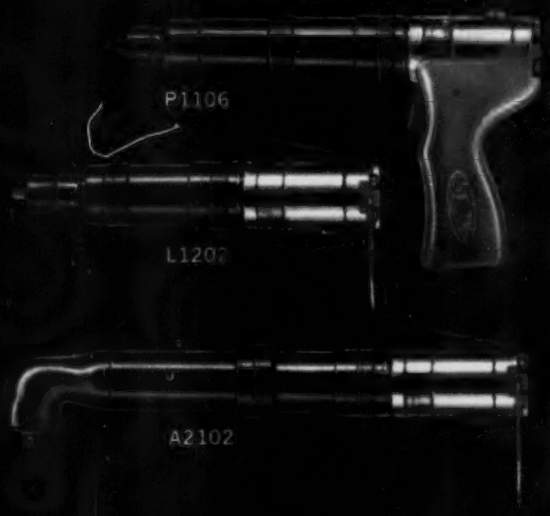
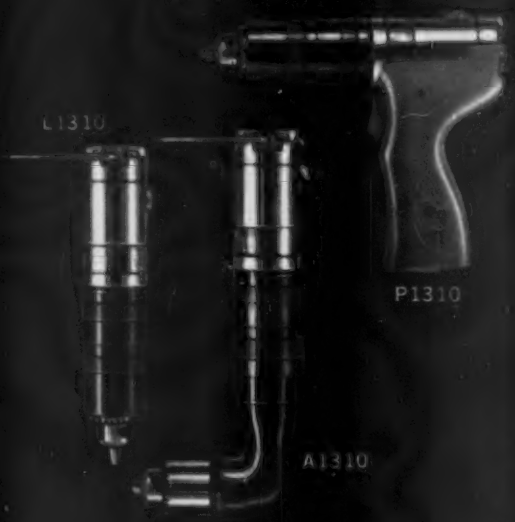


AIR DRILLS



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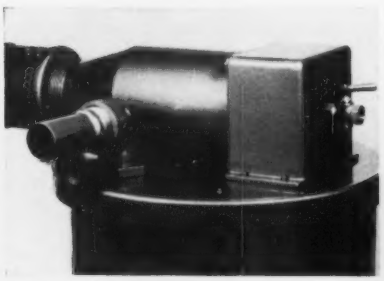
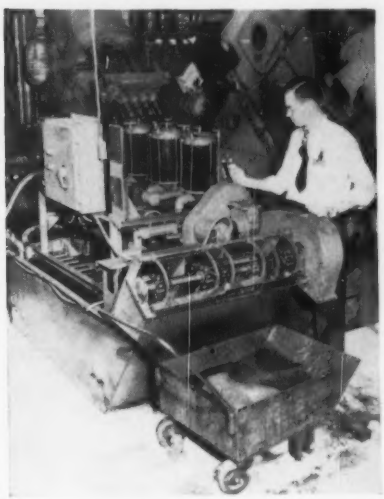


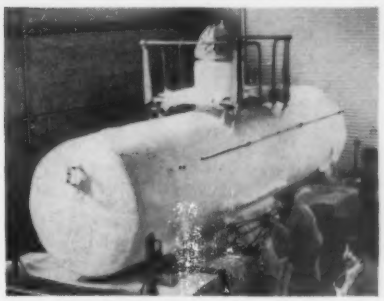
Vacuum Cleaner

The Northeast high-power ejector type vacuum, suitable for cleaning diesels, box cars, etc., fits 30- and 55-gal drums. It operates on compressed air, has no moving parts, and will pick up almost anything that will pass through a 2-in. suction hose. It will pick up material such as sand at a rate of 4,000 lb per hr, or liquids at almost 6,000 gph. *Northeast Industries, Inc., Dept. RLC, 282 Greenwood ave., Midland Park, N. J.*



Cartridge Filter

A combination separator and cartridge filter will filter materials down to 5 micron size in capacities from 20 to 500 gpm. The dirty solution enters the separator by retarded movement through overflow weirs, most of the solids being separated before the liquid is pumped through the cartridges for filtering. Cartridge filters contain pleated paper elements which are made in 5, 20, and 40 micron retention sizes. Pleats are uniformly spaced and reinforced with nylon bands to provide strength for back-flush pressure and to keep pleats apart during the filter cycles. By timed electronic control, each cartridge is back-flushed in sequence, using the filtered liquid from other cartridges. The back-flushed liquid containing the dirt flows into a conveyorized seeper tank, from which it slowly flows through small holes to a settling tank where it is held until solids are settled. Liquid then overflows to the pump section for recirculation. Conveyors in all sections remove solids to tote box. *Henry Mfg. Co., Dept. RLC, 538 East Reed st., Bowling Green, Ohio.*



Urethane Foam Jacket For Tank Cars

A urethane foam jacket which is expected to withstand the flexing and jolts of normal tank-car service is being tested on the shells of two 4,000-gal cars. The cars were sprayed with a 4-in. thick jacket of rigid urethane foam blown with General Chemical's Genetron fluorocarbon gas, and a 40-mil-thick light gray coat of catalyzed polyester reinforced with chopped glass fiber roving was sprayed on for vapor sealing. About 575 lb of 2½-lb density rigid urethane foam was used.

The cars will carry urea-formaldehyde fertilizer solutions at about 77 deg F. The rigid urethane foam blown with Genetron fluorocarbon gas is said to be superior in insulating effectiveness to the insulation regularly used. The insulation and steel outer jacket combination now used on tank cars weighs about 6 lb per sq ft; the urethane foam jacket, 1 lb per sq ft. In case of a wreck, damaged foam could be cut away and replaced by spraying. *Allied Chemical Corp., National Aniline Div., Dept. RLC, 40 Rector st., New York 6.*

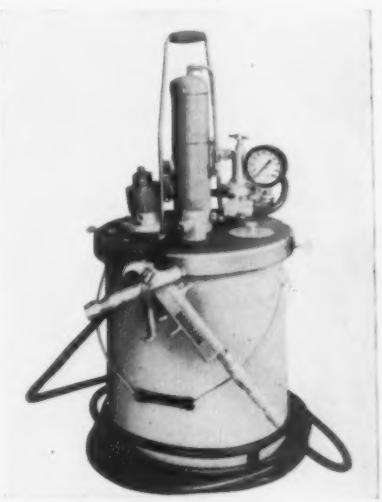
One-Piece Bulkheads

The DF-B one-piece metal bulkheads are movable partitions used two to a box car. Bulkheads are suspended from traveling beams which span the width of the car. Beams are roller mounted on tracks along the car roof at the side walls. The bulkheads, pivot mounted on the track on the traveling beam, permit a full 360-deg turn. Either or both can be rotated 90 deg for storage against car sides, or locked against car ends. A single locking and unlocking lever in the center of each partition serves as a handle for positioning the bulkhead. Releasing the lever engages the pins in holes

in locking tracks at sides of floor and ceiling. The lever will not seat unless all four pins are in place. *Evans Products Co., Dept. RLC, Plymouth, Mich.*

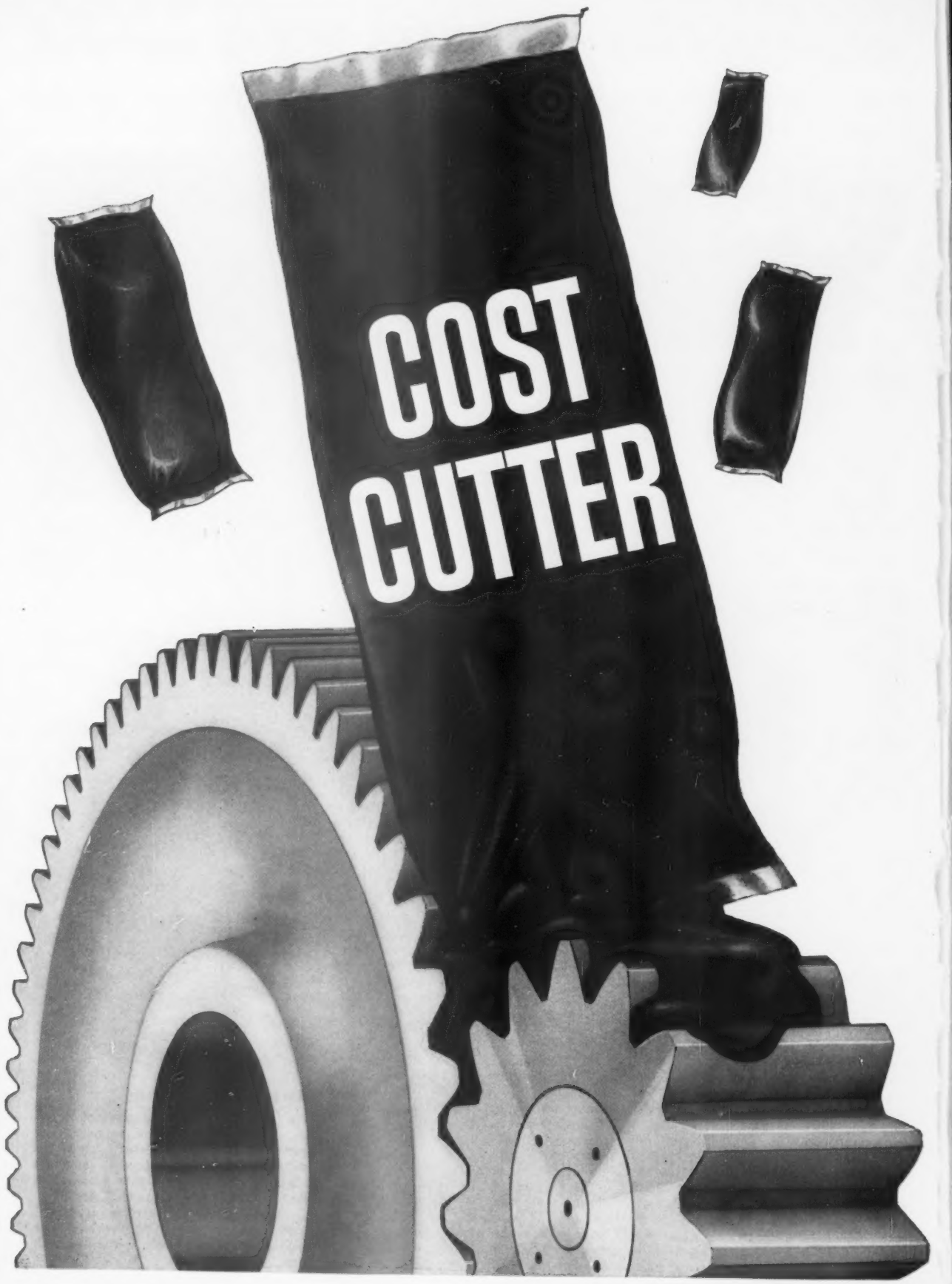
Metal Cleaner

W. O. No. 1 is designed to simplify the prepaint treatment of metal surfaces, cleaning, passivating, and removing corrosion in one step. It produces a slightly porous surface which absorbs primer, providing a firm base for paint. The cleaner may be applied by brushing, spraying or swabbing. It may also be used by immersion. *Turco Products, Inc., Dept. RLC, 24600 S. Main st., Wilmington, Calif.*



Airless Spray Units

The Little Giant line of compact airless spray units features a light, compact, one-gun unit for 5-gal containers. It has all the features built into large two-gun units and can be supplied with or without air-operated agitator, with or without stainless-steel filter. The pump is a 25 to 1 divorced type. All critical parts are made of stainless steel. The slide air valves are Nitroloy. *Balcrank Inc., Dept. RLC, Cincinnati 9, Ohio.*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A-1549A

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BULLETIN:

Railroads report that diesel locomotives using Shell's Talona RS Oil 40 can run for more than 250,000 miles without an oil change

Diesel locomotives used to require an oil drain every 30,000 to 50,000 miles. Now, even locomotives in heavy-duty freight service are rolling 250,000 miles—and more—without an oil change. The reason: Shell's Talona® RS Oil 40. Read how this new lubricating oil can trim operating costs for you.

UNDER normal railway operating conditions, Shell's new Talona RS Oil 40 can be used from overhaul to overhaul without draining.

And with Talona RS Oil 40, railroads are finding that they can extend intervals between engine overhauls. Often, by substantial margins.

Five key reasons

Here are some of the key reasons for the outstanding performance records that this new diesel lubricant is making:

1. Talona RS Oil 40 contains special additives to resist oil oxidation. This allows the oil to lubricate effectively, without excessive thickening, even in prolonged heavy-duty freight service.

2. Talona RS Oil 40 has good detergent-dispersant qualities. It helps keep engines exceptionally clean.

3. Talona RS Oil 40 contains alkaline additives to help neutralize damaging acids—a major cause of engine wear in diesel locomotives.

4. Talona RS Oil 40 provides outstanding protection for silver bearing surfaces.

5. Talona RS Oil 40 has excellent filterability—a must for locomotive diesel oils.

NOTE: *All U. S. railroad diesel engine manufacturers have endorsed Shell Talona RS Oil 40 for use in their equipment.*

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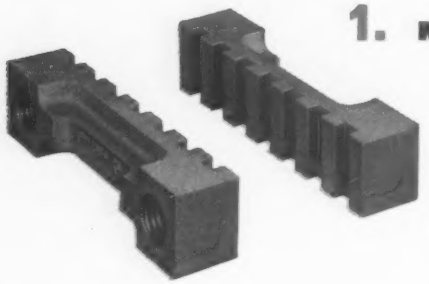
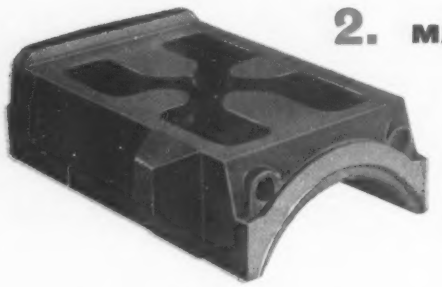
STABILIZED

Now MAGNUS offers you three low-cost ways to



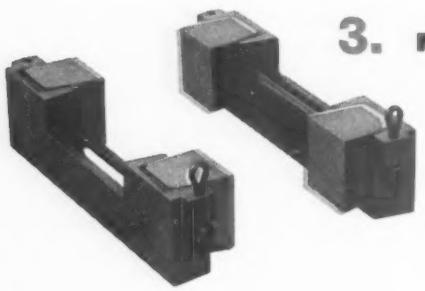
1. MAGNUS R-S JOURNAL STOPS

Provide maximum stabilization of the entire journal box assembly—increase miles per hot box ten times



2. MAGNUS FLAT-BACK SOLID BEARINGS

Wider, non-tilting design limits bearing displacement—provides effective stabilization at lower cost



3. MAGSTOPS

Offer the inherent advantages of R-S Journal Stops in a low-cost, rugged, fabricated design

THE NEXT big step toward better bearing performance will be the adoption of effective means of stabilizing the journal assembly—for this is the most economical way to reduce hot boxes. Magnus, the pioneer in journal stabilization, now offers you *three ways* to achieve this result at low cost. All have been approved by the AAR for test installations in interchange service. Ask your Magnus representative to discuss with you the most effective solution to this problem. Or write to Magnus Metal Corporation, 111 Broadway, New York 4, or 80 E. Jackson Blvd., Chicago.

JOURNALS—

get BETTER BEARING PERFORMANCE

Bolted to the inside of the box, on both sides of the journal, Magnus R-S Journal Stops positively prevent excessive displacement of bearing, wedge or lubricator pad, even under severe humping, braking or road impacts. By stabilizing the entire journal bearing assembly they eliminate the major causes of bearing failures —increase miles per hot box *ten times;* miles per cut journal, *fifteen times!* In short, they cut maintenance and operating costs all along the line—double bearing and dust guard life, reduce wheel flange wear, extend the maximum safe period between repacks.

Journal Stops give the low-cost solid bearing a chance to work at optimum efficiency, not just part of the time, but *all* of the time! They can be easily installed on any freight car, new or old. And they increase new car costs less than 2%—*pay for themselves* in less than 3 years!

Wear on R-S Journal Stops is slight, and Stops can be re-shimmed should wear become excessive. The Stops should last the life of the side frame.

The Magnus flat-back bearing design provides the most economical means of stabilizing the journal box assembly, and has proved highly effective for many types of service. Its greater width, increased angle of journal contact and full-area contact with the flat wedge inherently limit the fore-and-aft movement of the journal within the box under road shocks and switching impacts. This restriction of movement protects the dust guard, tends to prevent spread linings in the bearings.

The flat-back bearing is also manufactured to "pre-war length," increasing resistance to impact and wear at both collar and fillet ends. Its greater mass and weight result in a more *rugged* bearing with inherently greater life expectancy.

Magnus flat-back bearings are interchangeable with any standard raised-back bearing, simply by using a flat-bottomed wedge. Bearing dimensions, in each size, are the maximum which can be easily installed in the journal box through the standard lid opening.

Here's a new approach to the problem of journal box stabilization—a low-cost fabricated journal stop with forged steel frames and renewable bronze inserts that hold the journal in the center of the box even under the most severe car impacts. The frames are welded to the inside of the journal box and need never again be removed. Wear occurs only on the brass inserts, which are easily and inexpensively replaced during wheel changes, without any special tools.

The big advantage of the MAGSTOP is low-cost installation that can be accomplished quickly whenever side frames are removed for any reason. The bronze inserts provide ample bearing area and can easily be replaced, if required, without shopping the car.

By limiting journal movement within the box, MAGSTOPS greatly increase bearing life, protect against dust-guard damage, prevent loss and contamination of lubricant. They reduce wheel flange wear, too.

MAGNUS METAL CORPORATION
Subsidiary of **NATIONAL LEAD COMPANY**

EDITORIALS

Fighting Back

Proposed legislation introduced into the U.S. Senate would be, if passed, a major defeat for the railroads in their battle to obtain equal treatment in meeting our national transportation requirements. All in the railroad industry should voice their protests to this legislation by writing to the two U.S. Senators representing them in Congress.

Two bills, the Bartlett (S.1197) and the Yarborough (S.1089), should be defeated. The truckers and waterways operators are supporting the Bartlett bill; the waterways operators are in favor of the Yarborough bill. The bills would wipe out the rate-making freedom that the Transportation Act of 1958 gave the railroads and other carriers regulated by the ICC.

For more years than railroaders care to remember the railroads have been losing traffic to tax-supported competition. Now, by use of equipment designed specifically for the traffic it hauls, the railroads have been recapturing some of the business that went to their subsidized competitors. Piggyback and new double-deck and triple-deck automobile cars have made it possible to haul highway trailers and automobiles at lower costs than this traffic could be moved over highways. The Transportation Act of 1958 made it possible to charge rates commensurate with these lower costs. The proposed bills would require the railroads to again hold a "rate umbrella" over their subsidized competition.

All in the railroad industry should be against these bills. They are not in the public interest because the nation needs a strong, healthy railroad industry as the backbone of our transportation system. They are not in the interest of railroaders whose jobs would be threatened by further weakening of the railroads' already precarious position. We urge that our readers voice their protests to their senators and also be "for something" by voicing their support for the "Magna Carta for Transportation" that we outlined on this page in our April issue.

Gearing Wheel to Rail

Sand between the wheel and the rail has long been the most effective and widely accepted means for improving adhesion for railroad vehicles. Unfortunately, the use of sand involves some very practical difficulties. Getting dry sand on the rail is an involved and expensive process, and keeping it there until it has served its purpose is difficult. Sand may also cause locomotive troubles and faulty signal operation; eventually it must be cleaned out of the ballast.

New methods for improving adhesion are constantly being tried. Probably the newest and most novel is "electric sparking" now undergoing tests on the French National Railways. To do this, the French employ two parallel circuits. One is a high voltage circuit which will ionize the air in two air gaps, and the other is a low-voltage circuit which will cause relatively heavy current to pass across the gaps. One of the gaps is between an electrode and the rail and the other between an electrode and the wheel. The effect is to remove surface contaminants, increasing the coefficient of adhesion between rail and wheel surfaces.

Electric sparking is only one of several methods for improving traction being tried by the French railways. Others have included anti-lubricants other than sand (such as powdered glass and carborundum); anti-lubricant slurries applied to the rail; and a rotating wire brush acting on the rail ahead of the wheel. Single-motor trucks with axles coupled through gearing; parallel-connected traction motors; low truck center supports; and other basic design characteristics have been adopted for new locomotives.

Anti-lubricants other than sand have been found, but none that can approach it in cost. Slurries have been found effective in American trials, but they have fallen short because they must be applied to the rail and allowed to dry or to react with contaminants prior to the passage of a train.

Trucks with their axles geared together are being applied to new French cars and locomotives. This increases the cost of the trucks and means that there can be little variation in wheel size. Low center supports on trucks minimize weight transfer from one axle to another, reducing the need for making an electrical torque transfer.

It is common American practice to operate diesel locomotives at low speeds with motors connected in series. This means that, at the lower speeds, motors accelerate more rapidly when they slip. It is common European practice to connect all traction motors permanently in parallel. This is helpful in reducing slip, but it increases the price of electrical equipment.

For several years, the Swiss have effectively controlled wheel slip and practically eliminated the use of sand by means of high-speed brakes which make a light brake application in less than half a second. Swiss locomotives have parallel-connected motors, and the brakes are usually applied manually on single locomotives units. It remained for American manufacturers to prove that it could be done automatically on multiple-unit locomotives with series-connected motors at low speeds, also with parallel motors at high speeds.

American operators will probably look upon electric sparking with a jaundiced eye. It is barely out of the laboratory. But the idea should not be discarded summarily. Sparking, as it is called, apparently does much to increase low-speed adhesion. While measurements indicate that it might increase rail wear very slightly, its net effect on the rail could be beneficial.

New processes and new materials constantly make practicable what were once considered "crack-pot" ideas. It seems fair to assume that railroads will gradually solve their adhesion problems. Then for all practical purposes, the driving wheels will, in effect, be geared to the rail.

THE SANTA FE'S FAST FREIGHTS KEEP EXACTING SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

TRADE-MARK

Progressive railroads like the Santa Fe are using fast freights for improved, accelerated service for their customers. This modern service requires trouble-free motive power with minimum lost-time for maintenance.

Every component in the complex locomotive—no matter how small or large—must perform dependably under conditions of heavy loading and high speed to meet the exacting requirements of the Santa Fe.

"National" generator brushes—small but vital components—offer proved commutation and life qualities and operate with the reliability so necessary for today's progressive railroad service.

One of our contributions to improved railroading is a positive service program on carbon brushes. Just call your "National" Brush Man or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N.Y. In Canada: Union Carbide Canada Limited, Toronto.

Contact your "National" Brush Man

UNION CARBIDE

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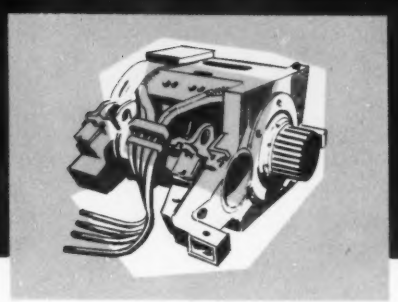
N.Y. CENTRAL'S "SUPER-VANS" KEEP PRECISE SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

TRADE-MARK



Because of fast freights or "Super-Vans" as they are known on the New York Central, today's major tonnage is returning to the progressive railroads of the nation.

To maintain precise schedules, every component in the consist—no matter how large or small—must offer exacting performance and rugged reliability.

"National" traction-motor brushes—wherever they are used—provide dependable life and commutation and thereby contribute to added miles with a reduction in commutator maintenance costs.

To National Carbon Company, improved railroading means a positive program to help the roads solve problems imposed by constantly changing and more difficult electrical conditions. To realize this assistance, just call your "National" Brush Man or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. In Canada: Union Carbide Canada Limited, Toronto.

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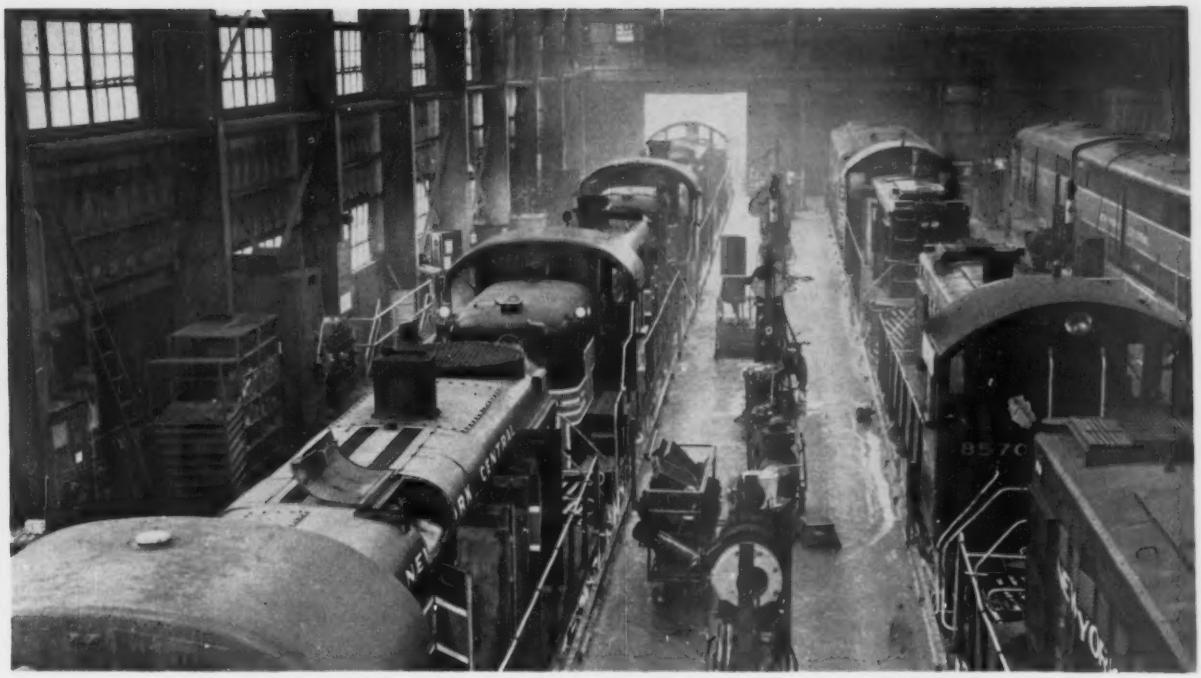


Spot maintenance facilities have been established along one track in running-repair section of the DeWitt diesel shop.

Spot Maintenance for NYC Alcos

Introduction of production—line techniques for diesel maintenance yields numerous benefits

Increased production, more precise control of work quality, and greater locomotive availability are all benefits achieved by the adoption of a spot maintenance system for New York Central Alco locomotives. The Central's DeWitt diesel shop at Syracuse, N. Y., location of this operation, is adjacent to the largest NYC yard east of Buffalo.

Long before "spot" maintenance was developed, the Central assigned practically all its Alco locomotives on the lines east of Buffalo. While even then DeWitt served as the "hub" of this Alco operation, maintenance was done at most of the major terminals in the territory. These included Buffalo, N. Y.; Rochester, Watertown, Utica, Selkirk yard (near Albany), West Springfield, Mass., and several other points.

In May 1959 the "spot," or "progressive track," system was introduced at DeWitt and was assigned the maintenance of 355 Alco road and switcher units. Along with the DeWitt yard switchers, these included most of the main line road freight and road switcher units, all of which could be worked in and out of DeWitt readily.

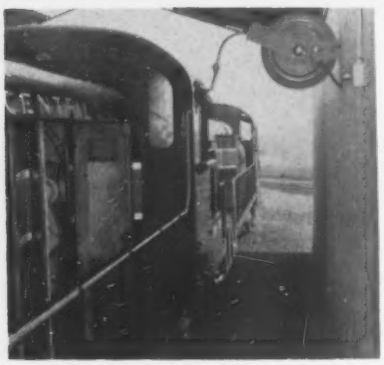
Introduction of the system followed NYC investigations aimed at reducing the costs of locomotive maintenance. The system then established was a four-station operation. It was set up on one of the three "through" tracks which extend through the 250-ft length of one of the shop's two bays. The shop is a typical three-level design used by many railroads.

As maintenance techniques were refined, more and more units were assigned to DeWitt for maintenance. Today, all Alco road power and almost all of the switchers on the Eastern District — a total of 546 units — are brought to DeWitt for periodic work. Each unit comes in once monthly for preventive maintenance and necessary ICC work and inspection. These operations are handled by the "spot" system.

When the shop load was increased to 546 units, it was impossible to handle this volume of work efficiently on the four original spots. It was then that the number of work stations was expanded to six. This required the construction of shelters at both ends of the shop. On the inbound end, the shelter is used for preliminary inspection and cleaning of engines and electrical equipment. On the outbound side, the shelter provides an area where locomotives can be started and

Carbody cleaning is completed before locomotives enter the shop.

Shelter at entrance of shop is Spot 1 where unit is inspected.



Air hose reels are installed at Spot 1 for blowing of electrical equipment.

Cleaning machines are adjacent to spots where components are removed.

As unit leaves shop, clock automatically advances to indicate next 70-min period.

checked following the actual maintenance operations which are carried on inside the shop.

In addition to setting up one track with the progressive arrangement for preventive maintenance and for monthly and quarterly ICC inspections, the adjacent track has now been equipped for use exclusively for ICC semi-annuals and annuals. These are not handled on a progressive basis, but, daily, four units are placed on this track, all scheduled for completion in 16 hrs. Some specialized equipment has been installed along this track for use in conjunction with the tests and work accompanying the ICC annuals and semi annuals.

The progressive track has been tooled and aranged to handle the large number of units which pass over it. Periodic maintenance is a three-shift operation, with each locomotive advancing to a new work station every 70 min. Work is distributed among the "spots" so there will be a minimum of interference between the mechanics performing different jobs. There are 21 men for each shift on this "progressive track."

Spot 1, the shelter at the west end of the shop, is designated as the "ICC Inspection" spot. When a unit arrives at this location, the following are checked: cylinder firing and operation of fuel injection system; air compressor operation and oil pressure; leakage of lubricating oil, fuel oil, water, and exhaust gasses around the engine; battery and battery charging system; fans and shutters, and engine shutdown. The engine is then stopped and the main generator is blown with compressed air. Only equipment at this location is a pair of air hose reels.

Units are not put through the progressive track with engines running. By using battery current to power the traction motors, one of the six units on the track can move the other five at the 70-in. intervals.

Operation at Spots, 2, 3, 4, and 5 are indicated in the accompanying illustrations. Each of the assignment boards is painted the color which designates that spot. All the tools and equipment used at the site are also painted this same color. For each "spot" there is a work report corresponding to the assignment boards illustrated.

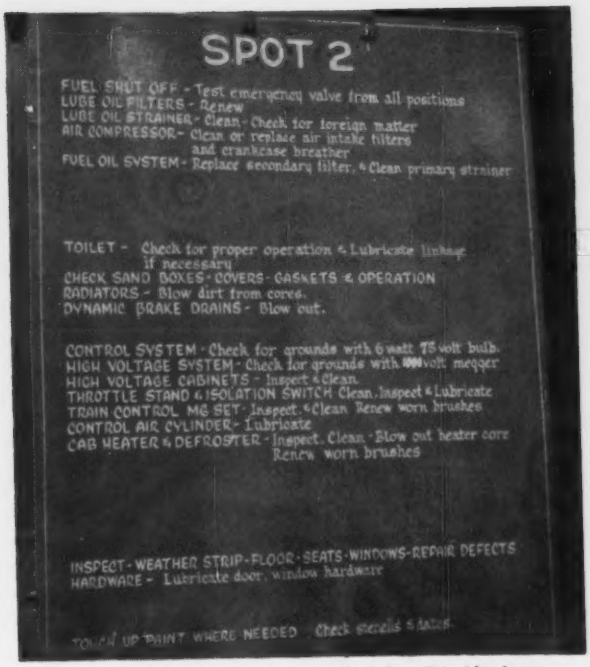
At Spot 2 there are racks for fuel-oil filters, fuel-oil strainers, air-compressor filters, filter-tank gaskets, jumper cables, and brake shoes. A test board for jumper cables is also located here. There are hose reels for cutting gas, compressed air, and water.

At Spot 3 are cabinets for stocking pipe fittings, injectors, motor and generator brushes, sander valves, air hoses, and knuckles. Benches are installed for working on components requiring adjustment or lubrication at this spot. There are hose reels for cutting gas and compressed air, and a connection for draining lubricating oil.

Spot 4 is the location where engine and carbody filters are removed for cleaning. A washing machine for these air filters and a smaller unit for cleaning lube oil strainers are located here. There are racks for the filters, for miscellaneous hardware, and for windshield wiper equipment. Hose reels supply lubricating oil, grease, cutting gas, water, and compressed air. There is a welder at this spot for use in making repairs where welding is necessary.

At Spot 5 work is completed on the unit. Clean filters are installed, work on electrical equipment is completed, and lubricant and cooling water levels are checked. The carbody interior is cleaned. There are hose reels for cutting gas, lubricating oil, water and compressed air.

The unit then moves to Spot 6, the shelter at the east end of the building, where the engine is started and a se-



Initial maintenance operations are started at Spot 2 inside shop.

Operations are arranged so there will be little worker interference.

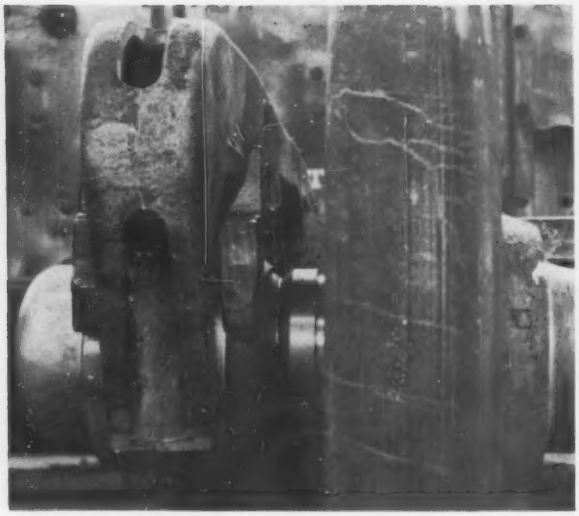
Boards and work areas are color coded for rapid identification.

Work is completed at this spot; unit goes outside for testing.

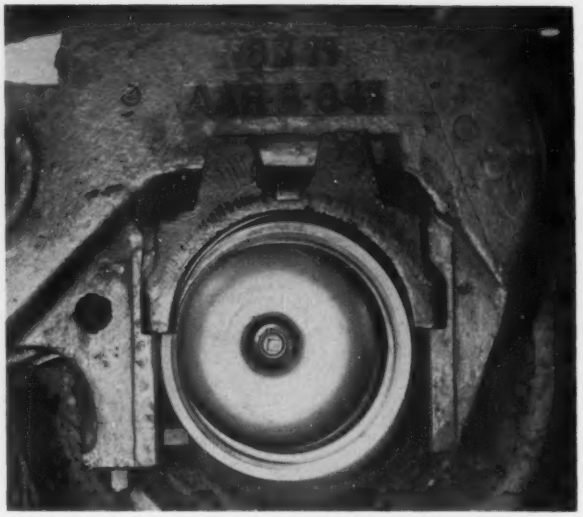
quence test is made. Fuel unit, PC switch, alarm bell, and 400-cycle motor alternator are all checked. Ground switch and overspeed are sealed. The unit is then dispatched for another month's service.

All types of Alco freight and switcher units are maintained on this line, including: 1,500-hp and 1,600-hp road freight; 1,000-hp, 1,500-hp, 1,600-hp, and 1,800-hp road switcher; and 660-hp and 1,000-hp yard switcher.

NYC now has a similar facility at Collinwood shop at Cleveland, Ohio, for maintaining General Motors units. This six-spot arrangement now handles most of the work on the motive power used on the lines west of Buffalo.



Displacement of adapter on large roller bearing means that side frames will not be parallel and that bearing will be improperly loaded.



Adapter displacement should be immediately obvious to inspector when he comes upon this large roller bearing in wide pedestal side frame.

Uniform Roller Bearing Inspections

More thorough and more uniform inspections should be made of the bearings on roller-bearing freight cars. To achieve this, the AAR Mechanical Division has just issued instructions for the routine inspection of these cars in train yards and also for shop-track inspections following overheating, derailments, and other accidents.

Rapid growth in the number of cars equipped with roller bearings means that car inspectors and car maintenance men are encountering these cars with increasing frequency. "Many . . . are not familiar with freight-car roller-bearing applications and proper [inspection] is not always given to these cars," cautions the Mechanical Division circular letter containing the new inspection procedures.

The Division's Committee on Journal Roller Bearings, working with the manufacturers, has prepared a set of instructions which apply to all types of AAR approved and conditionally approved bearings now in service. The information will later be incorporated in regular AAR publications.

Bearings to which the instructions apply are the compact package units which fit the AAR narrow-pedestal side frames and have the end caps which rotate while cars are in motion, and also the large bearing units which can be applied only in the wide-pedestal side frames (at present only one type of this design has received even conditional approval). While the large roller bearing can be applied only in the wide-pedestal frame under the AAR standard wide-pedestal adapter, a series of different arrangements can be used for the installation of the smaller bearing units. According to the Mechanical Division, the car inspector may find the smaller package roller bearings installed in any of the following ways:

- Under the AAR standard adapter in the AAR alternate-standard, narrow-pedestal side frame;
- Under the AAR standard adapter in any conventional integral-box side frame modified for the roller-bearing application;
- Under the large AAR standard adapter in the AAR standard wide-pedestal side frame.

Routine Inspection

According to the Mechanical Division routine car inspections should include the following checks of roller bearings:

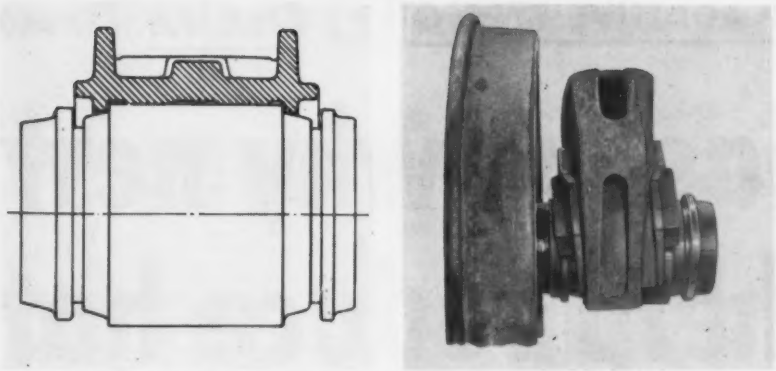
Check operating temperature. Running temperatures 15 to 50 deg F above ambient can be expected in normal operation. Check by placing the bare hand against the frame adapter. An overheated bearing would have an adapter on which the hand could not be held for a few seconds. End cap temperature may be considerably higher than the bearing temperature and should not be used as a point to check temperature. If an overheated roller bearing should be found, no lubricant, other than AAR-approved roller-bearing grease, should be applied, unless the bearing has obviously been destroyed by the overheating.

Inspect for damaged or missing parts. Observe the external appearance as compared to other assemblies on the cars.

Inspect seating of the adapter. All frame adapters have a pair of thrust flanges projecting downward to center the adapter on the bearing. These adapters can be displaced so that one of the thrust flanges will rest on the outside diameter of the bearing, leading to early bearing distress.

The adapter may be displaced when assembling the truck, while rerailing a derailed car, or when moving a car truck by hooking an overhead crane to the bolster or side frame instead of to a wheel or axle. Any time that the adapter is disengaged from the bearing there is a possibility that it may not seat properly when again lowered into position. Wide-pedestal and narrow-pedestal adapters may be displaced in this way, and their position on the roller-bearing units should be carefully checked.

Narrow-pedestal side frames are designed so that the narrow-pedestal adapter cannot normally be displaced, although derailments might damage the retainer key in the pedestal leg,



Adapter properly seated on bearing (left) may at times be displaced if side frame is lifted or raised from wheel set. Improper alignment resulting is obvious from end of truck (right).

allowing the bearing and adapter to separate. When the narrow adapter is used in the integral-box side frame with the rotating-end-cap roller bearing, the side frame could become misaligned over the roller bearings, because the adapters have been displaced on the bearing surfaces. It is necessary to look into the journal box to check this condition. Compare each assembly with the others on the same car to determine if any adapters are out of place. This will tend to tilt the entire side frame and will load the bearing at only two points, a condition conducive to early failure. One of the thrust flanges on the displaced adapter may also be contacting either the rotating end cap or the rotating dust guard ring on the inside of the bearing assembly. In addition to being displaced outward or inward on the bearing, the adapter may tend to rotate inside the box.

When rotating-end-cap roller bearings are installed in wide-pedestal side frames with the wide-frame adapters, it is possible for the adapters to get out of alignment because they can be lifted from the bearing under the circumstances indicated above. The top of the adapter may be displaced outward or inward and, in either case, the adapter will be loading the bearing at only two points, a condition which can lead to early failure. The thrust flange on the displaced adapter may also be contacting either the rotating end cap or the rotating dust guard ring on the inside of the bearing assembly, as was the case with the integral box installation.

It is also possible to find the wide pedestal adapter improperly seated on the large roller bearing and alignment of these applications should be checked by car inspectors.

Shop-Track Inspection

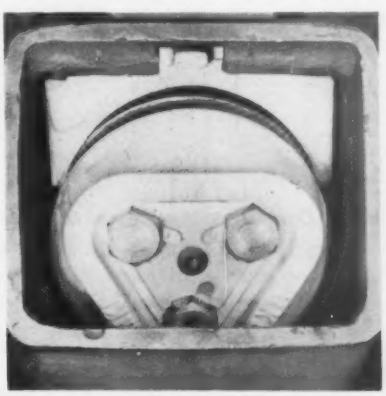
The Mechanical Division has also informed its membership that, when cars with roller-bearing units have been derailed, or when it is suspected the bearings may have been damaged from any other cause, the cars must be shopped and inspected. The specified procedure for inspection after derailment covers all the truck components in contact with the roller bearing. The Division has also indicated that the adapter which has been used with a bearing that was overheated should, before being reused, be inspected in compliance with adapter item (below).

Bearings. Bearings should be dismantled and all internal surfaces examined for Brinelling which could cause subsequent failure. Bearings which have overheated in service, or which have been subjected to heat from external sources, such as fires and flame throwers, must be removed from the axle and checked.

Axles. All axles from roller-bearing-equipped cars which have been involved in derailments shall, after the removal of bearings, be placed in an axle lathe to determine if axles are bent. The oscillating movement and uneven load distribution of a bent axle can cause a bearing failure.

Side frames. Side frames should be inspected to determine if they are bent or distorted. Side frames which are bent or distorted will cause undesirable loads on the bearing assembly which can lead to bearing failure.

Adapters. Examine the bore surface of the adapter which fits over the bearing for any ridges, grooves, or metal build-up which would prevent proper seating on the bearing. Check the adapter for distortion by placing the adapter over the replacement bearing. It should seat firmly on the bearing without pinching or rocking when hand pressure is applied on top of the adapter. Adapters which are warped, twisted, or otherwise distorted should not be reapplied. Cracked or broken adapters must not be reapplied, and must not be repaired by welding or brazing. Worn adapters should not be repaired by welding or brazing. Adapters with any of the above defects should not be reapplied, but should be returned to the shop with the defective pair of wheels for further disposition.



Adapter over bearing in modified integral-box side frame may be displaced laterally. Proper condition (left) is not readily distinguishable from the displaced condition (right).

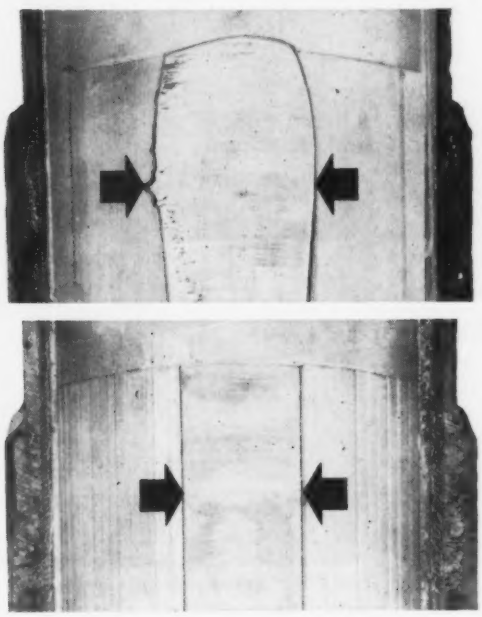
Adapter may rotate inside integral-box side frame and should be checked by inspectors.

Car Oil 1960 HD can actually prove more economical

Texaco Car Oil 1960 HD boxes as much as 40%

Minimum bearing metal displacement

Scored, worn, and misaligned bearings are also a common cause of hot boxes. Texaco Car Oil 1960 HD has a built-in characteristic that hinders gross bearing metal removal. Instead, Car Oil 1960 HD redistributes minute amounts of babbit... *actually assists in reseating the bearing.*



Smoother bearings with Texaco Car Oil 1960 HD. Contact areas of above journal bearings were reduced to 9 sq. inches and subjected to identical tests. Serrated edges (arrows) on top bearing, run on non-additive type oil, indicate considerable metal displacement. Straight edges (arrows) on lower bearing, run on Texaco Car Oil 1960 HD, indicate almost no metal displacement.

Savings can reduce car oil costs by 22c a gallon

Five major roads reported up to 40% decreases in hot boxes after switching to Texaco Car Oil 1960 HD. Savings because of reduced hot boxes can more than offset the slight additional cost of premium Texaco Car Oil 1960 HD.

For example: Suppose a road using 200,000 gallons of car oil yearly reduces hot boxes from 1,100 to 660 by switching to Car Oil 1960 HD in all journal boxes—using both summer and winter grades. A minimum saving of $100 on each eliminated hot box would net this road $44,000. This sum, if applied to the purchase price of the car oil, would reduce its cost by 22¢ a gallon. Therefore, in real terms, the per-gallon-price of Texaco Car Oil 1960 HD is actually about 16¢ less than the price previously paid for the non-additive type oil.

For full details on how Texaco Car Oil 1960 HD and unmatched service can mean fewer hot boxes for your road, call the nearest Texaco Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis or Atlanta. Or write:

Texaco Inc., *Railway Sales Division*, 135 East 42nd Street, New York 17, N. Y.

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Throughout the United States
Canada • Latin America • West Africa

Mechanical Division Meets June 28

When AAR Mechanical Division Chairman J. W. Hawthorne calls the Division's "limited" annual meeting to order on June 28, the group can look back on a year when there were numerous organizational changes and when its technical committees were called upon to meet many new problems posed by the rapidly changing railroad situation.

For the first time since 1954, the meeting will not be open to all railroad officers and supply representatives. This is in compliance with last October's request by AAR President D. P. Loomis urging all divisions, for economy reasons, to eliminate such sessions during 1961.

While the regular open meeting will not be held, the letter ballot to be mailed to all member roads within two months after the sessions on June 28 and 29 will again give evidence of the large volume of work which is carried on by the Division. The letter ballots will contain the usual number of propositions for changing existing, or adopting, new standards, alternate standards, and recommended practices. Subsequent adoption or rejection will be made in the regular way, with all roads casting letter ballots.

Typical of the Division's activities during the past year have been the adoption of a Code of Interchange for TOFC trailers and containers, acceptance of new car designs for interchange, and actions to eliminate loose packing from all journal boxes. Work at the AAR Research Laboratory in Chicago aimed at solving complex rolling-stock problems, has continued (RL&C, March 1961, p 21).

Consolidation of several committees and assumption of the jurisdiction over rolling-stock details formerly exercised by the now abandoned AAR Electrical Section have taken place during the year. Today's Mechanical Division has the following committees: Nominating, Arbitration, Sub-Arbitration, Prices for Labor and Materials, Sub-Price, Freight and Passenger Car Construction, Brakes and Brake Equipment, Couplers and Draft Gears, Loading Rules, Locomotives and Locomotive Fuels and Lubricants, Safety Appliances, Specifications for Materials, Tank Cars, Wheels and Axles, Lubrication of Cars and Locomotives, Journal Roller Bearings, and Electrical Equipment-Rolling Stock.

The July issue of RAILWAY LOCOMOTIVES AND CARS will carry a report of the actions taken at the annual meeting.

GENERAL COMMITTEE

J. W. Hawthorne (chairman), chief mechanical officer, ACL; T. T. Blickle, general manager, Santa Fe; F. W. Bunce, chief mechanical officer, Milwaukee; L. R. Christy, chief mechanical officer, MP; R. E. Franklin, assistant vice president, Southern; L. E. Gingerich, chief mechanical officer, PRR; J. H. Heron, assistant vice president-equipment, NYC; S. M. Houston, general superintendent mechanical department, SP; E. A. Kuhn, chief mechanical officer, C&O; C. A. Love, assistant chief mechanical officer-equipment, L&N; D. S. Neuhart, general superintendent motive power and machinery, UP; C. E. Pond, general superintendent motive power, N&W; F. B. Rykoskey, chief mechanical officer, B&O; J. A. Welsch, general superintendent motive power, IC; E. Wynne, vice president, CNR.


J. W. Hawthorne


T. T. Blickle


F. W. Bunce


L. R. Christy


R. E. Franklin


L. E. Gingerich


J. H. Heron


S. M. Houston


E. A. Kuhn


C. A. Love


D. S. Neuhart


C. E. Pond


F. B. Rykoskey


J. A. Welsch


E. Wynne

R B&W high strength bolts...

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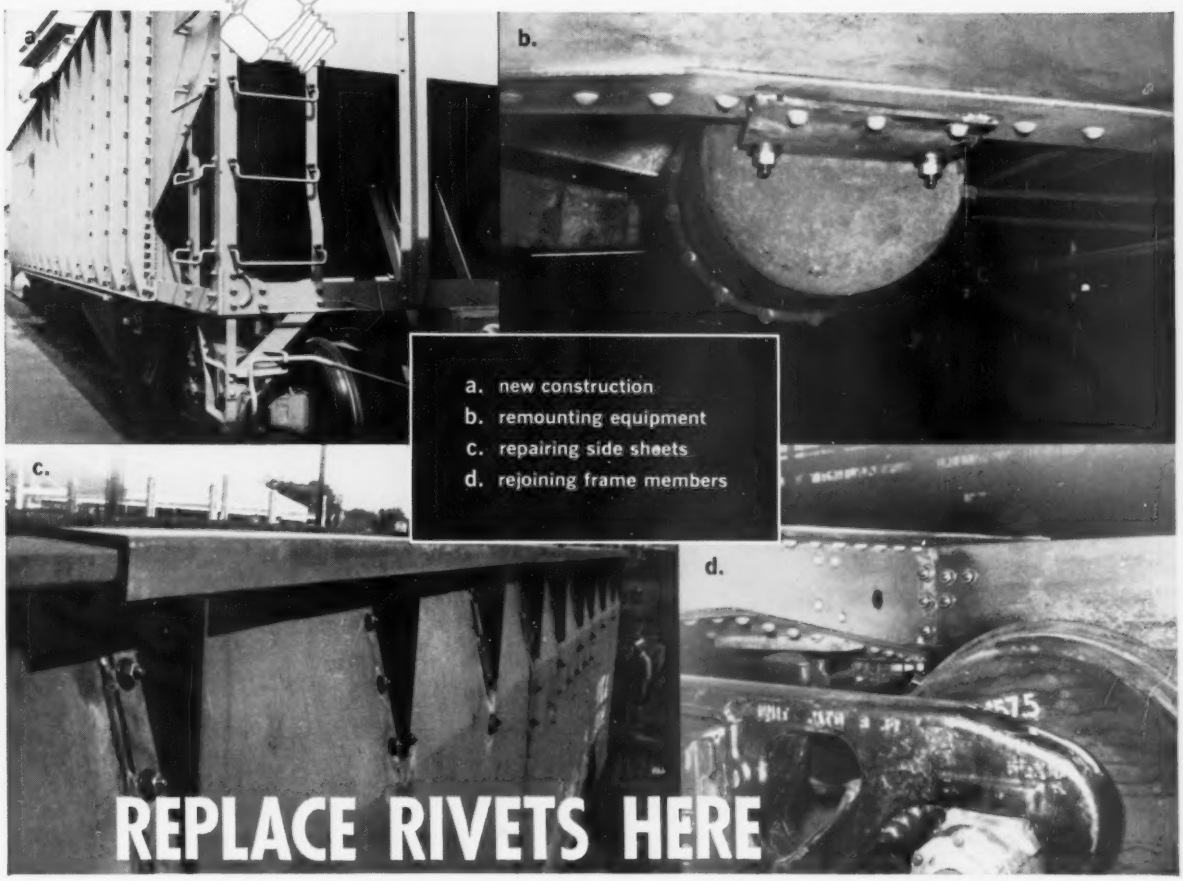

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LOOK TO ANY PHASE OF CONSTRUCTION or repair and you'll find a place where RB&W High Strength Bolts are cutting costs for leading roads. For example, bolts are replacing rivets in repairing top chords and side sheets on gondola cars, refastening center and side sills, remounting loose auxiliary equipment such as air reservoirs, tanks and retainer valves.

Reason 1: stronger construction. High strength bolts exert more than *double* the clamping force possible with rivets. Bolted joints *stay* tight.

Reason 2: faster construction. In comparative test, a crew used bolts in 69 rivet locations in gondola cars, for a labor saving of $13.78. Though material cost increased $11.40, net saving was $2.38. You'll find that bolt installed cost is consistently less than rivet installed cost.

Reason 3: faster repairs – now, and in the *future*. Picture the time difference between simply unscrewing a nut, and burning out a rivet. When you add up the number of rivets that require replacement in *any* repair job, total time saving is considerable. Bonus: some jobs usually requiring shop attention can be *bolted* right on any repair track. Stock gets back on the road faster.

Road and shop tests by leading roads are proving the superiorities of RB&W High Strength Bolts. An RB&W engineer will be happy to tell you more. Meanwhile, send for Bulletin RR-1, or see catalog 1c/RB&W in the Modern Railroads Catalog file. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

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Just half as much cleaner can do this job better, if it's... new Wyandotte 939

This totally new product from Wyandotte, for diesel cleaning, handles locomotive-body and engine-room jobs other cleaners can't touch . . . actually works *better* than ordinary mild-alkaline cleaners at just half the concentration! Other advantages? New 939 has them to spare. It's safe on good paint, pleasant to use, and can be sprayed in engine rooms without harm to workers. Your Wyandotte representative has the product, and full details about how it works. Call him, today.

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J. B. FORD DIVISION

Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California; and Atlanta, Georgia. Offices in principal cities.

High-capacity cars will be owned by Shippers Car Line Division of ACF and will be leased to Kaiser Aluminum & Chemical Co. for alumina haul.

Center Flow Car Built of Aluminum

Tubular design eliminates the center sill and makes possible rapid discharge of the lading

Construction of 60 tubular aluminum covered hoppers will soon begin at the Berwick, Pa., plant of American Car & Foundry, Division of ACF Industries. These cars, to be leased by Kaiser Aluminum & Chemical Co. from ACF's Shippers Car Line Division for movement of alumina, are to be patterned after an ACF-built prototype which has recently been undergoing an intensive series of road and laboratory tests. ACF and Kaiser teamed to design and build a covered hopper which would "weigh less, cost less, and increase the load limit." Result is the Center Flow car having an inverted pear-shaped body and without the conventional center sill.

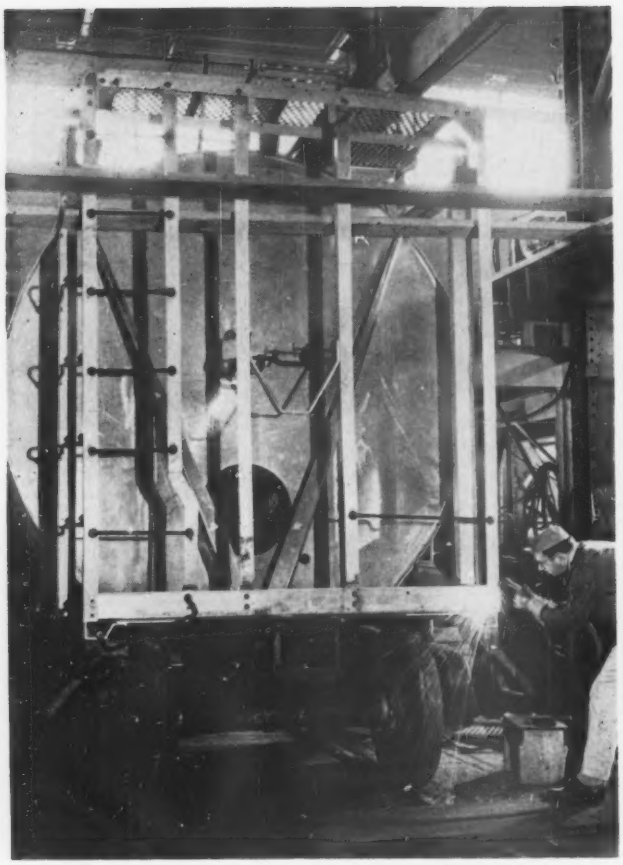
Covered hoppers have recently become the railroad "proving ground" for new materials and new car construction techniques. The latest entry, the ACF-Kaiser design, is a 4,000 cu ft car weighing 43,000 lb and having a load limit of 208,000 lb. The design is the result of Kaiser's investigation of how to utilize aluminum freight cars economically in hauling alumina, the ore from which aluminum is produced. But Kaiser also pointed out that the car is equally adaptable to carrying a wide range of commodities and believes the advantages will appeal to many other shippers.

Other Features

In addition to its low weight, project engineers claim the Center Flow car has other unusual features:

- "Monocoque" design in which the exterior skin or shell takes the load stresses, as is also the case with aircraft structures;
- Inverted pear-shaped body in which there is only single pyramiding of lading so that at least 97% of the body volume can be filled with lading instead of the estimated 93% utilization of conventional covered hoppers;
- Variable length without basic changes in design to meet different cubic capacity requirements;
- Elimination of center sill which makes possible discharge openings on car's longitudinal center line, giving unobstructed discharge and shortened unloading time;
- Lower center of gravity (84 in.) than the conventional rectangular-body car (86 in.).

The plus on payload figures to be 28,000 lb compared with a conventional steel covered hopper car of 4,000 cu ft capacity, and 15,000 lb compared with conventional aluminum covered hopper car. Each of these cars has been designed to weigh



Fabrication of the prototype car at ACF Berwick shop was accomplished without difficulty. ACF has built both aluminum freight and passenger cars.

Roof hatches are on center line. Production cars are to be equipped with running boards down each side of car.

With discharge gates open wide, lading was found to flow from car too rapidly for conveyors to remove it.

251,000 lb when fully loaded, the AAR's maximum weight on rail for a car with 6½-in. x 12-in. journals and a pair of four-wheel trucks.

The Center Flow car, weighing only 43,000 lb, has hauled 207,000 lb of alumina in actual service tests. These were made with the prototype car between Gramercy and Baton Rouge, La., and Ravenswood, W. Va., the points between which the 60 cars will run in regular service.

Four Compartments

The Center Flow car interior is divided into four compartments by three bulkheads or partitions which serve two purposes. Structurally, they brace the shell; they also make possible the simultaneous movement of different materials. There are no obstructions in any compartment which impede loading or unloading.

Side and crossridge, and end floor sheets all slope at a 50-deg angle. The roof has six 30-in. diameter loading hatches in a single row on the car's longitudinal center line. The eight discharge openings, also on the center line, are of the conventional 13-in. x 24-in. size. Inside length of the body is 46 ft 6 in. Inside width is 10 ft 2 in., and the outside width, 10 ft 2½ in. Actual cubic capacity is rated at 3,950 cu ft.

Car is constructed basically from Kaiser railroad stock, with some structural members of 6061 alloy. The latter is a widely used construction alloy. The former is a high-strength, weldable alloy developed some years back by Kaiser. It has good physical properties (33,000 psi minimum yield strength); is highly weldable, and has excellent corrosion resistance. About 12,000 lb of plate forms the shell; another 3,000 lb of extrusions is in the four longitudinal sills and framing. Roof, partitions, and sides above lower side sills are ¼-in. plate. Lower portion of the tubular body is $\frac{5}{16}$-in. plate. Lower side sills are 13.5 lb/ft extrusions; upper side sills, 4.5 lb/ft extrusions.

The car is equipped with rubber draft gear. Trucks are A-3 Ride-Control with 2½-in. travel springs, 6½-in. by 12- in. roller bearings, and 36-in. wheels. The car has empty-load brakes. Over strikers, the car's length is 56-ft 6 in. Truck center distance is 46 ft 6 in. and extreme height of the car, 14 ft.

Testing of the prototype car has included static, impact, and road service tests. The car was subjected to 41 impact tests at speeds of 2 to 11 mph. Road tests at speeds up to 60 mph were made on branch-line and main-line tracks of the Pennsylvania with the car empty, partially loaded, and fully loaded. The car was loaded with coal for these tests, because its weight per cubic foot is approximately the same as alumina. Tests were fully instrumented to measure coupler forces, strains, accelerations, and velocities. Instruments included 256 strain gages and 12 accelerometers.

R. Cook, test engineer of ACF's Research Laboratories at the Berwick plant, said, "Tests have verified theoretical assumptions and design parameters." A fatigue test will be completed before the 60 cars go into production in early August.

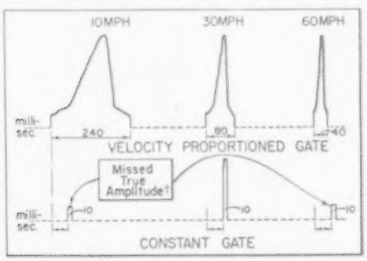
SAFE WITH SERVOSAFE®

SERVOSAFE® railroad electronic specialist John Sollesnes adjusts set of track transducers—recorder "gate" switches—for Grouping III (automatic alarm with carrier) Hot Box Detective* system on Pennsylvania Railroad main line near Edgewood, Md. Pair of "Servo" infrared trackside scanners is shown just outside rails in this typical installation.—■—Type of gating—interval during which scanner views passing journal box and recorder charts amplitude of heat pulse—is critical. Some other types of detector gating systems may actually miss hot boxes entirely.

'Working' on the railroads

HOW THE HOT BOX NOTES THE GATE

SERVOSAFE® "velocity proportioned gate" system always views same area of journal box—always records comparative heat pulses—regardless of train speed. "Constant gate" systems, on the other hand, view different area of journal box at different train speeds. Diagram, below, shows possible displacement of gate impulse relative to heat impulse due to varying train speeds, lateral movement of wheel flanges, askew trucks, scanner alignment, and rail creepage. Constant gate systems can miss hot boxes completely. SERVOSAFE velocity proportioned gate always records true amplitude regardless of variables.



† Due to causes listed in text.

More than 275 SERVOSAFE® Hot Box Detective* systems now in successful operation on 28 major Class I railroads.

Nothing succeeds so well as success.

Nothing sums up SERVOSAFE® success so well as this popular epigram by Talleyrand. Even veteran railroadmen are often astonished at the rapid acceptance this pioneer infrared hot box detector has gained since November 1952. Its success, of course, lies in the success of the basic SERVOSAFE Hot Box Detective* system itself.

Or, more accurately, in the success of the *six* operational SERVOSAFE systems—more than 275 installations now working successfully on 28 major Class I railroads coast to coast.

Consider 3,000,000 hours of successful and efficient operation over the past four years alone. How many hot boxes have been caught in the nick of time? How many possible disasters have been averted? Twenty-eight railroads can provide the best answer. But what better answer than the fact that they have already ordered additional SERVOSAFE systems for installation early this year!

Be safe with SERVOSAFE. Give your experienced Servo man a call.

FOOTNOTE FACTS:

What is a hot box?—Statistics show that a normal bearing, under equilibrium conditions, will run ±30° F. of the mean operating temperature for all journals on the train. Therefore, a bearing whose running temperature is markedly outside this range must be considered abnormal, and consequently be defined as a "hot box."

When is a hot box?—Many "hot boxes" go undiscovered during winter and show up in summer to produce the peak in set-out statistics. Yet detection of winter abnormalities would save thousands of dollars a year now lost because of irreparable damage to journal assemblies during the course of the cold season.

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Everyone Out of Step But Me

By Ken Wright

During the lunch break, several of the fellows were talking "shop." Fred suddenly asked, "Pete, how many mechanical refrigerator cars are in service in the United States?"

"That would be rather hard to say, but I'd guess about 6,000," Pete replied. "There are more going into service all the time. Why did you ask?"

"I was wondering if anything about them would ever be standardized. Every car I get on seems to be slightly different in some way."

"I know what you mean," said Pete, "but when you get right down to it, there is probably a lot more standardization than you realize. If everything were to be standardized now, it could mean there would be no further improvements. Many of these minor differences are really evidences of progress."

During the afternoon, Fred came up to Pete rather triumphantly and said, "If you can spare a minute or two, maybe you can tell me what part of your 'progress' has fouled up this car I'm working on."

"What's your problem?" asked Pete.

"I'm supposed to be preparing this car for loading," Fred explained, "but the temperature isn't coming down; head pressure seems to be too high; and there's almost no air pressure differential across the evaporator coil. When I use the clamp-on ammeter around the evaporator fan leads, it shows the fan is running. The compressor is running and, apparently, is loaded. I'm stymied and don't know which way to go. What am I overlooking?"

"Let's go see," said Pete. "Are you sure that the compressor is really loaded up and that all cylinders are working?"

"Sure, Pete; all of the heads are hot."

By this time they had arrived at the car and Pete climbed into the machinery compartment. Almost immediately he came back out. "All the fans and motors seem to be running backwards," he exclaimed. "You're not moving the air through the car; that's why you are not getting the car cooled."

"Running backwards?" Fred repeated. "How could that be?"

After a moment's thought, Pete answered. "Remember, this equipment is powered by 220-volt, 60-cycle, three-phase circuits. Unless the phasing is standard for the diesel alternators on the cars, for the standby cables, and for the electrical components, motors will not rotate in the right direction. AAR standards say the phasing must be 1-2-3; not 3-2-1. This is one standard which is universally observed, and it is important to you and everyone else."

"You've made your point, but how could the phasing be wrong?"

"I'll have to guess, but I can think of two things that could have happened. The car's diesel-alternator could have been changed recently, and the phase sequence of the power plug might not have been checked. What I think probably has happened is that this car was placed for unloading at some place where the engine was shut down and the cooling equipment was connected to a standby cable. They found all the motors turning the wrong way. What was really wrong was that the phase sequence of the standby plug was improper. However, instead of making any change to the standby cable, the wiring in the car was changed. It was easy. All that was done was to reverse two of the wires from the power plug to the cabinet. When the car's own alternator was again connected, all the fans and motors would be running backwards.

"This results from a universal tendency to feel that the other fellow's equipment must be at fault; that yours could never be. Sort of the 'everyone's out of step but me' idea."

Pete was about to continue, but was interrupted. "Just a minute, Pete. How could one know whether the phase sequence is proper, except by checking the rotation of the motors?"

"There isn't any way to tell without a phase sequence instrument. We don't have one, because we're not building cars. However, if the cars were built according to AAR standards, then the wires to the power plug should be color coded."

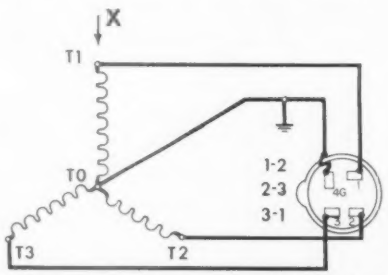
During the discussion the engine had been shut down. Now Fred asked, "Where do you think I should make the change on the wiring and just how do I do it?"

"We'll assume the alternator is probably all right. I doubt that the wiring was changed there, because that would be a tough job. The easiest place to make such a change would be at the control panel. You'll find three cables entering the cabinet from the power plug. Just reverse any two of them. Here, let me make you a sketch of what is involved."

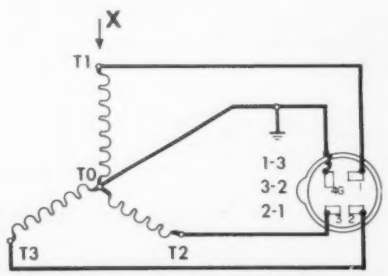
"My sketch is of the alternator, although we are actually going to make our changes at another place. But this is easiest to see. Note that T1 in the alternator is connected to the Contact 1 in the power receptacle. T2 is connected to the Contact 2 and T3 is connected to the Contact 3. Now assume point X is passing T1, T2, and T3 in a counterclockwise direction.

"Maybe, it would be better to say that T1, T2, and T3 do not move, but let's look at it that way. You can see the circuit sequence would be 1-2, then 2-3, then 3-1. We should say Phase 1 leads Phase 2, Phase 2 leads Phase 3. Now suppose we interchange two of the cables going to the power plug, such as 2 and 3."

(Continued on page 51)



Pete's first sketch shows the AAR standard arrangement for connecting an alternator.



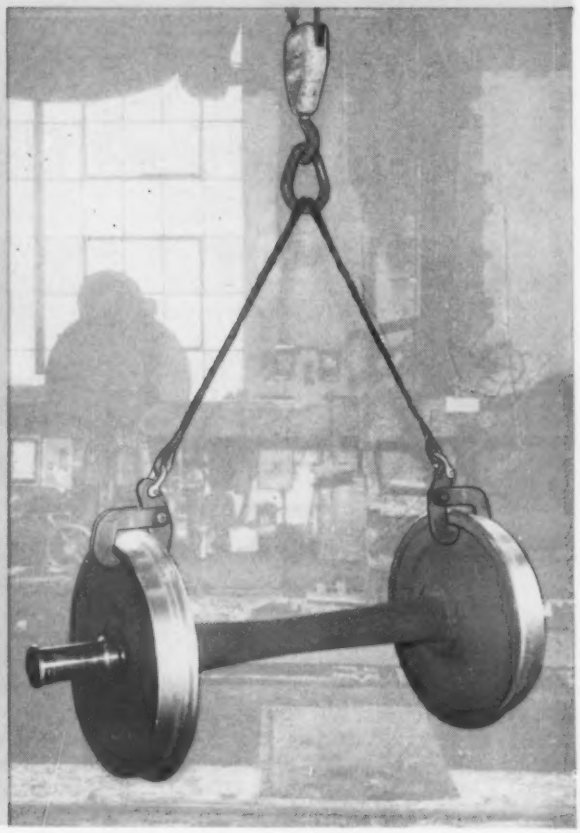
Second sketch shows what was found on car. It resulted from switching two of alternator leads.

This is the seventeenth article in this series, discussing the operation, maintenance and trouble shooting of mechanical refrigerator cars.

UNIQUE YELLOW STRAND COMBINATION WHEEL SLING MOVES WHEELS OR ASSEMBLIES SWIFTLY, EASILY, SAFELY!

Close-up shows specially designed Yellow Strand hook. It clasps or unclasps easily and cannot slip during lift. Fits all wheels.

Sling in operation in the yard. Only one wheel is shown, but two are carried as easily. Sling holds wheels straight and true making it easy to slip wheels on axle.



In the wheel shop the Yellow Strand sling lifts wheel assembly with little effort on the part of the worker. Assembly can be maneuvered quickly and easily. Hooks cannot slip.

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With rear of van locked on turntable, tractor moves around van's end on nose wheel. Nose wheel is retracted and van pushed on to car.

NYC Introduces Flexi-Van Mark III

Because vans on the Mark III car swing so they do not overhang equally on both sides, it is possible to unload from closely spaced tracks.

Flexi-Van Mark III, a refinement of the original container-type piggy-back system introduced by the New York Central in 1958, was demonstrated publicly for the first time last month. The system involves a new type of rail car and a simplified loading and unloading system.

Like most conventional NYC Flexi-Van cars, the 85-ft Mark III car can transport a pair of the 40-ft Flexi-Van wheelless trailer bodies. The conventional car has a pair of turntables, each of which supports one of the 40-ft containers at the container's center (RL&C, May 1958, p 39).

Turntables directly over the two truck centers on the Mark III car carry only the rear ends of the two containers, while their front ends are supported on two kingpin receivers adjacent to the car's center.

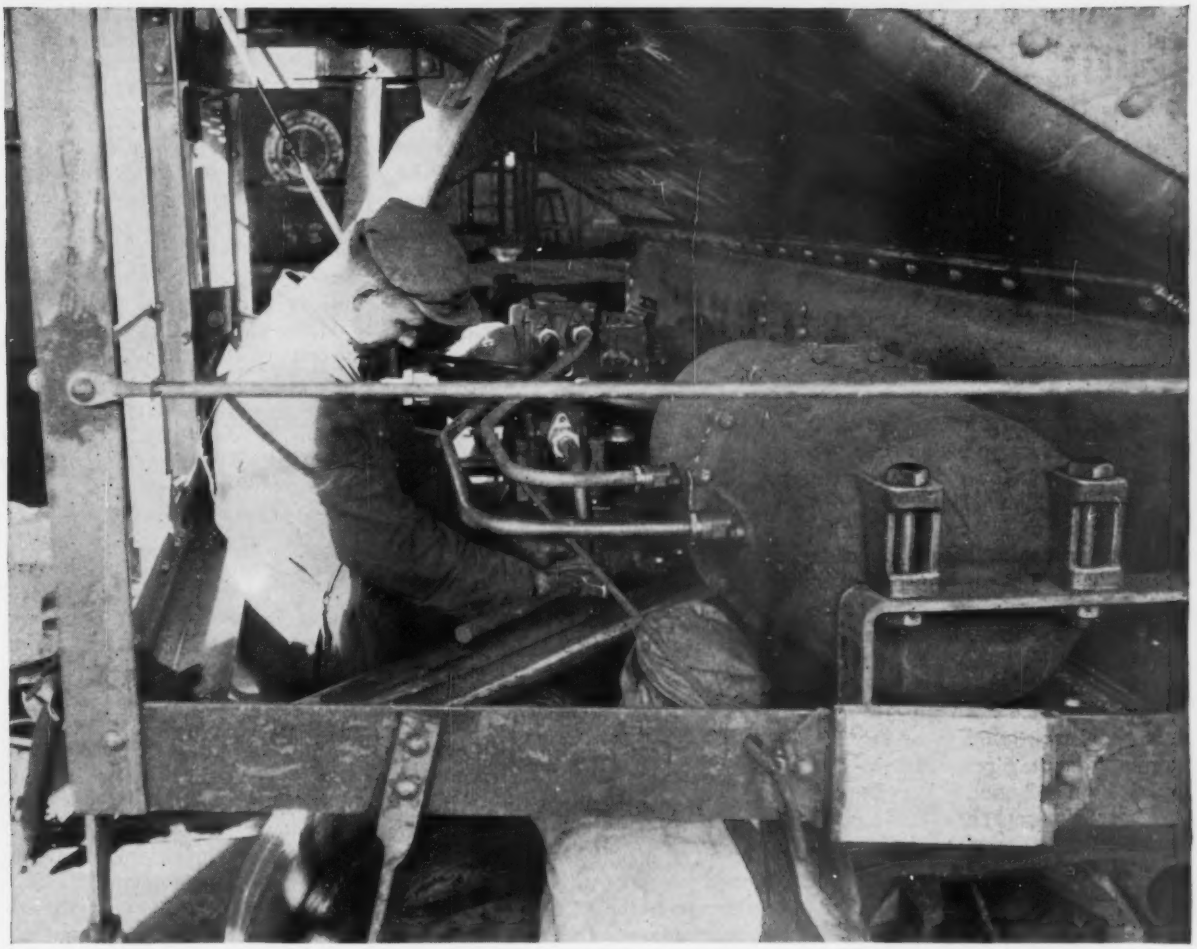
A weight saving of about 5 tons results from the lighter underframe. The weight of the containers is no longer carried into the underframe between the trucks and the hydraulic lifts necessary in turntables on the conventional cars have been eliminated.

Sloped ends of the tracks on the turntables, into which the container's side angles slide during loading of the Mark III car, elevate the container to clear the highway bogie and make a hydraulic lifting system unnecessary. Containers ride about 10 in. higher than on the conventional Flexi-Van car, but the car retains its low-clearance and low-center-of-gravity characteristics which are claimed as advantages of the Flexi-Van system.

Along with the conventional turntable cushioning system giving 8 in. longitudinal travel in each direction, the container is carried over 2½-in. travel spring groups under the turntable tracks for vertical and lateral cushioning. The car also has conventional rubber draft gears and roller-bearing trucks. It weighs about 56,000 lb and costs $1,900 less than the conventional model.

The 25 Mark III cars which the NYC is now receiving are being built by Greenville Steel Car and are fitted with Strick Flexi-Van attachments. A Southern Pacific Clejan car, recently fitted with Mark III attachments, is now being tested.

Because the container on a Mark III car is not balanced on the turntable, it cannot be rotated by hand. A special Ottawa Yard Hustler tractor now becomes an essential feature of loading and unloading. This tractor has a powered and telescoping nose wheel so it can move from the front of the trailer to a position at right angles to the front and rotate the van to its rail-haul position. The piston rod of a hydraulic transfer cylinder then shoves the van into its rail-haul position, or hooks to it to move it from this position during unloading.



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The ***M·F Uni-Torque*** lock nut. Prevailing torque lock nut that will withstand terrific vibration and shock loading.

The ***M·F Two-Way*** lock nut. Has the added speed of either-end application, and the *center* lock permits bolt end to be flush with the top of the nut.

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The ***M·F Uni-Torque*** and ***Two-Way*** lock nuts are *all-metal*, deflected thread lock nuts—a locking principle with a successful record of more than 40 years of safe fastening for air brake equipment.

These *proven* lock nuts combine *reliability* with a very substantial savings over the non-metallic type.

Why spend *more* to sacrifice proven protection?

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Slim Solves His 'PC' Troubles

By C. Charles

Slim and Ken, the two road foremen, had not seen each other since their talk with George, the air-brake instructor. Then they had discussed the functions of the P-2 application valve which is a part of the 26-L locomotive air-brake equipment.

Slim told Ken about a difficulty he had encountered on locomotive 4200. "I'm sure, if George hadn't gone over the 26-L with us I would have been in for trouble," Slim said.

Ken was very interested and asked for a more complete description. It seems that the engineman had made an automatic brake application, positioning the brake-valve handle in *Service* position. He then took his foot off the safety control foot pedal. Immediately, there was a blast of air from the foot pedal whistle much greater than normal from the pipes connecting foot pedal valve, P-2 application valve and overspeed magnet valve. This was followed by actuation of the PC switch, which brought all units to idle.

"What would be the normal sequence?" Slim asked, but before Ken could answer, he launched into an explanation.

"When the 26-C automatic brake valve is placed in *Service* position, the control valve is actuated. This operates the J-type relay valve which allows main reservoir air to flow to the brake-cylinder pipe. Air flows to the brake cylinders and through a tee to connection 26 of the P-2 brake application valve, then through passages to the top of the suppression valve, so it is moved to its lower position. In this lower position, the suppression valve prevents the flow of air from the spring chamber above the application valve diaphragm and from the timing reservoir to atmosphere. With the suppression valve in the lower position, the foot pedal can be released without actuating the application valve. Because air was passing into the brake cylinders, the trouble had to be in the P-2 valve.

"The brake cylinder air flowing into connection 26 of the brake application valve is the controlling air," Slim continued. "This air flows to the top of the suppression valve in the P-2 valve. If brake-cylinder air pressure is unable to move the suppression valve down, the safety control foot pedal will not be isolated.

"When the engineman took his foot off the foot pedal, he opened connection 3 of the P-2 valve to atmosphere at the foot valve. With the suppression valve in its upper position, air from the spring chamber above the application diaphragm spool valve and the timing reservoir could flow through connection 3 and the safety controlling pipe to the foot pedal and then to atmosphere.

"Main reservoir air under the application spool-valve diaphragm will overcome the spring pressure above, deflecting the diaphragm upwards and carrving the application spool valve to its upper or *Applied* position. In the *Applied* position, the spool valve connects and disconnects several ports and passages. One of these allows main reservoir air in pipe 30 to be connected through the spool valve to port 5 and to the pipe to the PC switch, thereby initiating a power knockout.

"Why would the brake-cylinder air pressure not be capable of moving the suppression valve to its lower position?" asked Slim.

Ken thought a moment and replied. "There are two possible causes. The '0' ring around the suppression valve piston could be leaking, so it would allow brake-cylinder air to flow to atmosphere through the exhaust port below the piston. If this were the cause, the leak might be great enough to release the brake cylinder pressure. The relay valve might also supply only enough air to keep the brakes applied, but not enough to depress the suppression valve. Because no air was passing out of the suppression valve exhaust, I would guess your trouble was due to the suppression valve sticking in the 'up' position."

"Very good," replied Slim. "It so happened we were at the terminal. I had our maintainer replace the application valve portion. After he installed the new portion and cut in the air, he applied the brakes and took his foot off the safety control pedal. This time there was no PC light. We were able to make up time and finally came in right on schedule. On my return, the maintainer told me that when he had placed the application portion on the test rack, it would not pass the suppression-valve operating test. When he removed the cover of the suppression valve, he found it to be seized in its upper position.

"I tell you, Ken, you sure have to study these days to keep up with all the new locomotive equipment."

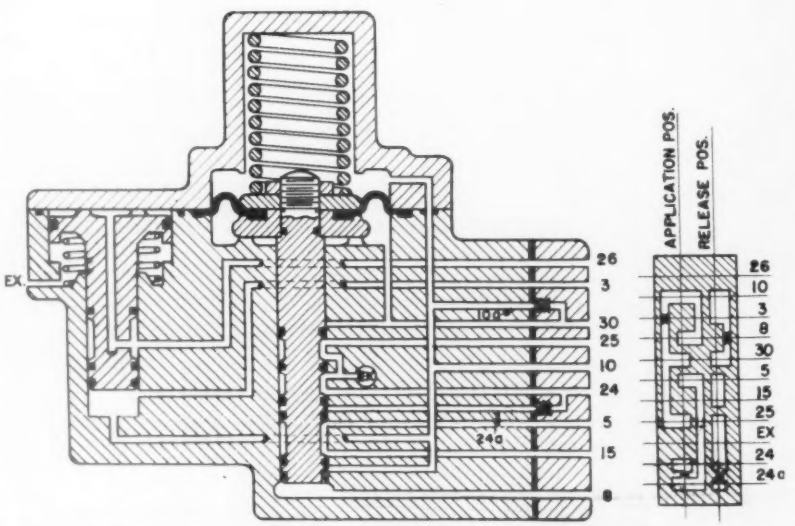


Diagram of P-2 Brake Application Valve includes these connections: **3** - foot valve; **5** - equalizing reservoir; **8** - lock over; **10** - safety control; **15** - equalizing reservoir charging; **25** power knockout; **26** - suppression; **30** - main reservoir; **24** - reduction limiting reservoir.

This is the fifth installment in a series on the 26-L brake. The fourth installment, in two parts, appeared in Dec. 1960, p 30, and Jan. 1961, p 31.

Aluminum flooring and lining are being installed because of their durability. Holes are being drilled for rivets which secure lining panels.

A&S Rebuilds with Aluminum

Floor panels composed of five "boards" are precut to proper width and clipped to underframe.

A rebuilding program recently undertaken by the Alton & Southern is equipping ten newly acquired box cars with aluminum flooring, lining, doors, and running boards. This is the first time all these products have been used in a single car. Flooring and lining are Alcoa products. Doors were fabricated by Youngstown Steel Door Company from Alcoa aluminum, and running boards and brake steps were fabricated by Morton Manufacturing Company.

This is the first application of the newly developed multi-leg Alcoa aluminum flooring. Each of the aluminum "boards" has an 8-in. top surface width supported by four legs. Edges are designed to provide nailing grooves between the boards. The floor sections consist of five of the 8-in. extruded floor boards welded together and cut to the proper length to fit across the car. These floor panels are installed in the car with steel clips welded to the underframe. A self-sealing filler is applied between the boards to make it possible to nail between them, and the top surface is coated with an anti-skid surfacing material.

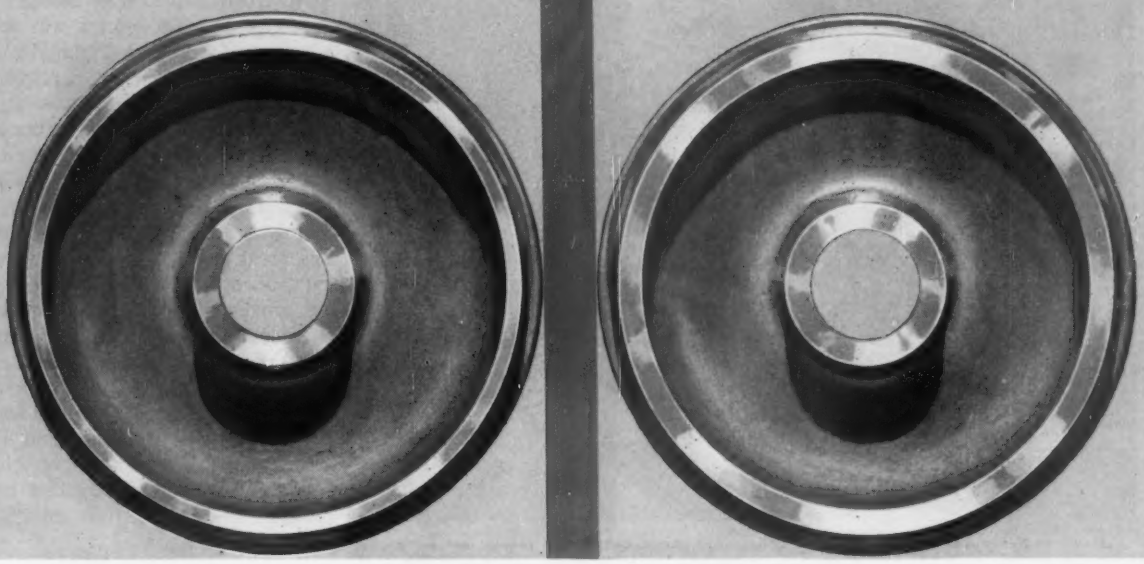
Durability is a prime reason given by the A&S for its use of all the aluminum components involved in the rebuilding of these 40-ft 6-in. box cars. Along with its corrosion resistance and strength, the aluminum floor is estimated to save 1,300 lb in weight as compared with a steel floor. The lining weighs 1,800 lb less than a comparable ¼-in. steel lining, and each door weighs about half as much as a comparable steel door.

During the rebuilding at the A&S East St. Louis, Ill., shop, car doorways were widened from the original 6 ft to 8 ft, making it easier to use lift trucks for loading and unloading. Added stringers were applied before the floor was installed, a new requirement of the AAR Interchange Rules intended to make floors strong enough for today's lift trucks.

Extrusions used for side and end linings are attached to wood furring strips by nailing and to the side and end posts by rivets. The extrusions on the first car extended up 42 in. from the floor, with the remainder of the lining to the ceiling consisting of tongue-and-groove siding. There are 52 lading strap anchors installed in the aluminum and wood siding. Subsequent cars are being lined entirely with aluminum extrusions, or with a combination of aluminum extrusions and plywood.

one of these is a ONE-WEAR WHEEL
the other is a TWO-WEAR WHEEL

THEY'RE BOTH CAST BY GRIFFIN



HERE'S WHAT THEY HAVE IN COMMON...

- Developed to meet the grueling demands of high mileage freight cars
- Special-design parabolic plate distributes stress evenly
- Cast within 20-thousands of an inch tolerances
- Perfectly round as cast . . . no machining required
- Only two tape sizes. (Actually, most Griffin® Wheels are within two half-tape sizes!)
- All present AAR gauges can be used
- Pressure pouring in graphite molds results in superior flange and tread
- Long sweeping fillets under flange and rim give greater strength

HERE'S HOW THEY DIFFER...

GRIFFIN EQS® ONE-WEAR WHEEL

- Minimum 1¼-inch back rim. Can be turned on both flange and tread to restore full contour.

GRIFFIN EQS® TWO-WEAR WHEEL

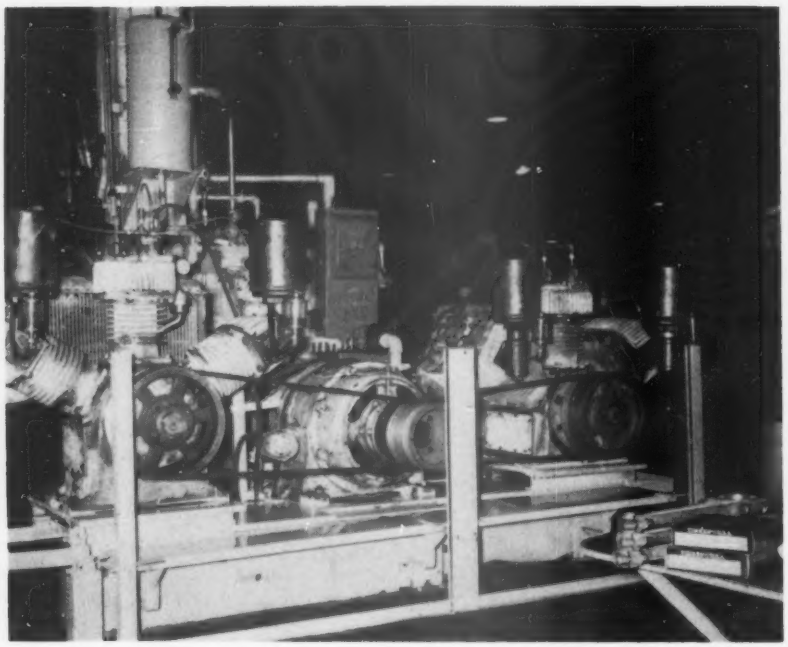
- Minimum two-inch back rim, with one-wear tread and flange design.
- A *multiple-wear* wheel that can be "turned" several times. (You're assured of *at least* two full turns, regardless of flange wear.)

GRIFFIN EQS® ELECTRIC QUALITY STEEL

GRIFFIN WHEEL COMPANY 445 North Sacramento Boulevard, Chicago 12, Illinois
GRIFFIN STEEL FOUNDRIES Ltd. St. Hyacinthe, Quebec; Transcona, Manitoba, Canada

Diesel Repair Time Savers

Milwaukee Air-Compressor Test Stand

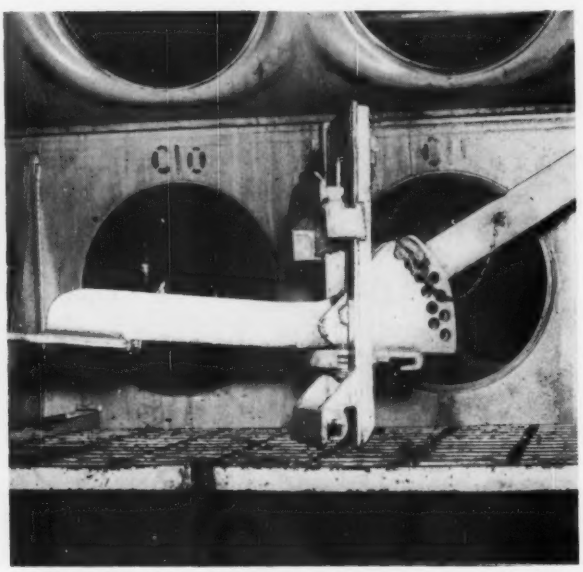


Motor at Milwaukee shop now can be utilized full time because road rebuilt test stand.

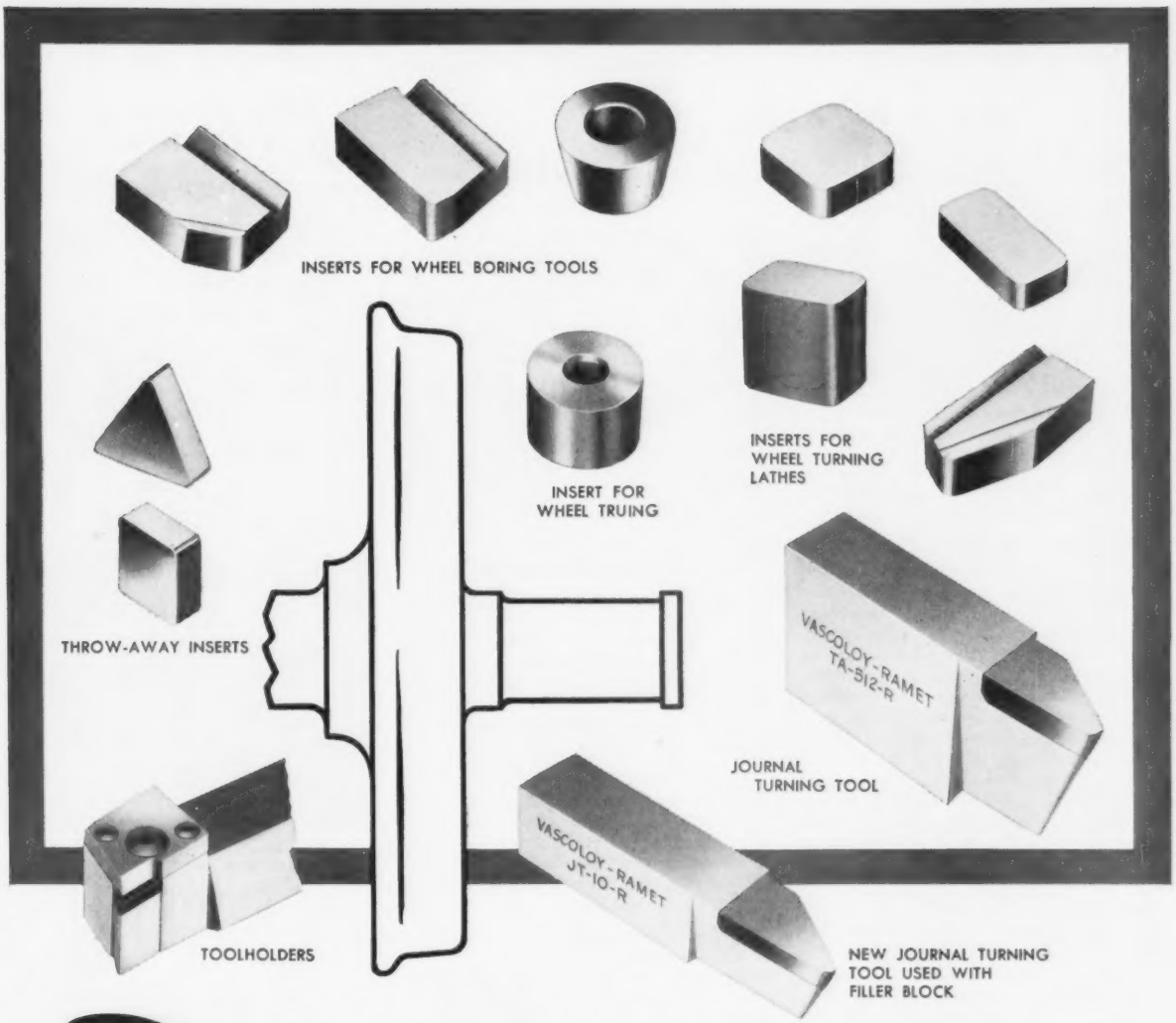
The Milwaukee gets full-time performance out of a 50-hp motor operating the air-compressor test stand at its Milwaukee shops. Past practice was to give orifice and break-in tests to one compressor. The motor was loafing on the off cycle. Additional pulleys on the motor's drive shaft and another stand are so arranged that while one compressor is loading, the other is unloading.

An orifice test under full load is run separately on each compressor for 45 min with equal cycling on and off. In the break-in test, an interrupted cycle controlled by a timer enables rings to be broken in under road conditions. The test requires 6 to 8 hr and is generally on a ½-min on and off cycle. Temperature of the discharge air is taken. An oil gage is applied for the orifice test and break-in, and afterwards removed. Air discharged in the break-in test is usually piped to the shop air line for use on week ends in clean-up operations.

Illinois Central Rod-Assembly Positioner



Fork rod assemblies for engines having either round or square crankcase openings can be aligned without repeated barring at IC shops. Assembly is of ¼-in. plate weldments. Handle is adjustable.



V-R wheel and axle tooling provides superior machining performance

Write for FREE CATALOG . . .

For consistent, superior performance in your machining operations, you can depend upon V-R carbide. With over 30-years pioneering experience in carbide research, engineering and manufacturing, Vascoloy-Ramet exercises complete control of quality from ore to the finished product. The V-R line includes carbide inserts for wheel boring, wheel turning and wheel truing, journal turning tools and toolholders with throw-away inserts. Be sure to discuss your machining problems with your V-R representative.

CREATING THE METALS THAT SHAPE THE FUTURE

V-R VASCOLOY-RAMET

844 MARKET STREET • WAUKEGAN, ILLINOIS

R-814

(Continued from page 6)

The *Sandersville* has ordered 25 covered hopper cars from Pullman-Standard.

The *Santa Fe* has ordered 50 2,000-hp diesel locomotives as replacements for units acquired almost 20 years ago. Builders not specified.

Trailer Train has completed placement of a $6,700,000 order for 500 piggyback flat cars (RL&C, May, p 36). American Car & Foundry will build 180 cars; Bethlehem Steel, 100; General American, 25; Pullman-Standard, 195, including 90 Lo-Dek cars. All will be roller-bearing equipped.

Union Tank Car has ordered 137 tank cars from its Whiting shops—21 to be 20,000-gal capacity; the remainder, down to 4,000-gal capacity.

AAR Liberalizes Lubricator Core Requirements

Use of polyurethane-core journal lubricating devices will no longer be discouraged by the AAR Mechanical Division. Paragraph (b)5 of Interchange Rule, as eliminated beginning May 1, stated that devices "having core composed largely of polyurethane, must not be used in foreign cars to replace devices having core composed of other core materials having combination of other resilient material, or springs and a limited amount of polyurethane, unless car owner has expressed a preference for such devices . . . Where car owner has not expressed preference for them, no material charge can be made for such lubricating devices applied."

Commenting on this change, the division states "The AAR Research Department is continuing its present investigation of various types of core materials as used in journal lubricating devices, including polyurethane, for the purpose of preparing recommendations containing definite requirements for all such core materials for eventual adoption and inclusion in AAR Specifications for Car Journal Lubricating Devices."

In a separate action, the division reports that conditional approval status has been given to the Absco journal lubricating device produced by the American Brake Shoe Company. This was effective May 1. The Interchange Rules will be amended in the next Supplement to show this device as Conditionally Approved in the table under Interchange Rule 101.

Shop Improvements

The *Baltimore & Ohio* has instituted in its Cumberland, Md., back shop a new "single-track progressive line operation" for the maintenance of diesel locomotives. Initially, the new system was set up for one-trick operation in which six units now pass through the progressive line, resulting in 180 units handled per month.. It is planned, however, to have the system expanded by July 1 to a three-trick operation which will increase monthly production capacity to 540 diesel units. The operation is designed to maintain about half of the road's motive power.

The *Canadian Pacific* plans to spend $289,100 in 1961 for shops and enginehouses, and $202,400 for shop machinery.

The *Northern Pacific* will expend $199,000 for the construction of a car shop and paint shop at Laurel, Mont., to replace shop destroyed by fire.

The *Louisville & Nashville* will modernize its car shops at South Louisville, Ky., at a cost of approximately $4,875,000. Automated wheel-shop equipment will also be installed at South Louisville at an estimated cost of $985,000, and a spot car repair system will be installed at Howell, Ind., at a cost of $134,200.

The *Union Tank Car's* new dome-styled car repair facility at Wood River, Ill., has an enclosed area of 110,000 sq ft, without internal supports, and its height is equivalent to that of a 10-story office building. A similar goedesic structure was completed at Baton Rouge, La., in 1958 (RL&C, Nov. 1958, p 25).

Personal Mention

Alton & Southern.—*East St. Louis, Ill.:* JOHN T. DALEY, superintendent motive power, appointed chief mechanical officer. EWALD MILKERT, assistant to superintendent motive power, appointed assistant chief mechanical officer.

Canadian Pacific.—*Montreal:* HAROLD W. HAYWARD appointed assistant chief of motive power and rolling stock, succeeding W. D. DICKIE (RL&C, May, p 37). MR. HAYWOOD assigned to special duties in connection with MacPherson Royal Commission on Transportation.

Chicago & North Western.— Following master mechanics relieved of Car Department responsibility in their respective territories and jurisdiction changed to cover motive power matters only: A. A. ENDERS, Chicago; H. K. COX, Clinton, Iowa; H. H. MAGILL, Milwaukee; H. R. SPENCER, Green Bay, Wis.; L. N. HASKINS, St. Paul; J. E. BREHM, Minneapolis (Cedar Lake). Following named district general car foreman: D. F. DILGARD, Chicago; W. N. LARSON, Proviso, Ill.; E. S. SPAFFORD, Minneapolis; C. A. STARK, Milwaukee; M. L. SWAIN, Council Bluffs, Iowa.

Monon.—*Lafayette, Ind.:* V. C. GOLDEN, assistant general manager and superintendent of motive power, appointed general manager, succeeding T. V. SHERRIER, retired.

New York Central.—*Collinwood, Ohio:* G. L. ZEIDER, superintendent of shop, given jurisdiction over Diesel Record Bureau. This bureau, at Cleveland, formerly headed by A. T. GREEN, retired.

Santa Fe.—*Cleburne, Tex.:* DEWEY J. EVERETT appointed superintendent of shops, with additional title of master mechanic, Northern District, Gulf Lines. *Albuquerque N. M.:* D. L. QUANEY appointed superintendent of shops, succeeding Mr. Everett.

OBITUARY

Lewis S. Billau, retired electrical engineer, Baltimore & Ohio, died suddenly in New York on March 9.

Supply Trade Notes

Spencer D. Moseley
GATC

S. S. Bruce, Jr.
Air Reduction

GENERAL AMERICAN TRANSPORTATION CORP.—*Spencer D. Moseley*, assistant to the president, elected president, succeeding *T. M. Thompson*, now board chairman and chief executive officer.

■

AIR REDUCTION SALES CO., A DIVISION OF AIR REDUCTION CO.—*S. S. Bruce, Jr.*, appointed manager of national railroad sales department in Pittsburgh, Pa.

■

SERVO CORP. OF AMERICA.—Five railroad district sales and service offices established: *Lennie E. Keeton*, sales engineer, Southeastern territory, Richmond, Va.; *Paul Prosswimmer*, sales engineer, Northeastern district, Hicksville, N. Y.; *Sal Compo*, sales engineer, Western district, Los Angeles; *Sanford Steward*, district manager, Central district, Chicago. Sales engineer for Southwestern district to be appointed.

■

DUFF-NORTON CO.—*J. D. Macklin* appointed sales representative, handling hoist sales in Minnesota, North Dakota, and South Dakota, and jack and hoist sales in Iowa and Nebraska. Headquarters, Minneapolis, Minn.

■

LEWIS BOLT & NUT CO.—Newly formed *Wolfe Equipment Co.*,—Marvin W. Wolfe, president—818 Olive st., St. Louis 1, Mo., appointed central midwestern representative for Sealtite Bolt and Loktite Nut Div. of Lewis Bolt.

■

NALCO CHEMICAL CO.—*Dr. David G. Braithwaite* named president, succeeding *Thomas C. Jones*, now chairman of the board.

■

COLUMBUS McKINNON CORP.—Manufacturing, sales and service branch opened at 955 Indiana st., San Francisco.

■

SYMINGTON WAYNE CORP. — *F. L. Bredimus* appointed vice-president—sales.

■

GENERAL ELECTRIC CO. — *Don T. Wonderly* appointed manager of locomotive product service.

Remanufactured commutators for units from GE-752, 746 or 731 motors now available from GE unit-exchange program.

ALUMINUM CO. OF AMERICA.—*D. B. Wood* appointed manager of bearings development.

■

SELLERS INJECTOR CORP. — *O'Brien Steam Specialty Co.*, Syracuse, N.Y., appointed Sellers representative in Central and Eastern New York.

■

GENERAL STEEL INDUSTRIES, Inc.—General Steel Industries new name of former *General Steel Castings Corp.*

■

TOWNSEND CO.—*David J. Belcher* appointed sales representative in Kentucky and Ohio. Headquarters, Cleveland, Ohio.

■

UNION CARBIDE DEVELOPMENT CO., DIVISION OF UNION CARBIDE CORP.—*C. Wayne Covington* appointed manager of sales for ULOK transportation filters, with headquarters in Des Plaines, Ill.

■

JOHNSON RUBBER CO. — Representatives appointed to cover railroad markets: *Fred W. Holstein Co.*, Hopatcong, N. J., VulcBond representative, Eastern United *W. A. Blackford Co.*, San Francisco, Pacific Coast representative; *Western States Supply Co.*, Omaha, Neb., Central-West area.

■

ACF INDUSTRIES, INC. — *James H. Lyon*, senior sales representative, Shippers' Car Line division, appointed manager of district sales at Chicago. *William M. Burris*, sales representative, Houston, Tex., appointed manager of district sales there.

■

PITTSBURGH PLATE GLASS CO.—*Carl H. Luther* appointed district sales manager, fiber glass division, Chicago.

■

ALCO PRODUCTS, INC.—*James L. Layton* appointed regional sales manager, transportation products, in Pacific region. Headquarters, San Francisco, Calif.

■

NATIONAL MALLEABLE & STEEL CASTINGS CO.—Effective July 1, name of company to be changed to *National Castings Co.*

OBITUARY

RAYMOND L. MORRISON, Sr., 64, president of the Morrison Railway Supply Corp., died April 27 in Miami Beach, Fla.

■

WARD N. MESSIMER, 66, retired equipment manager, Merchants Depatch Transportation Corp., died in Chicago on May 10.

Helps from Manufacturers

TESTING EQUIPMENT. 12-page bulletin describes line of ultrasonic testing equipment, portable industrial X-ray, and Magnetic Particle inspection equipment and supplies. (Write: *Sperry Products Co., Division of Howe Sound Co.*, Dept RLC, Danbury, Conn.

HOT OIL SYSTEM HEATER. 8-page Bulletin No. 4023 discusses the advantages of the use of oil instead of water/steam for heat transfer in Vapor's Hi-R-Temp liquid phase heaters. Construction details and complete specifications included. (Write: *Vapor Heating Corp.*, Dept. RLC, 6420 West Howard st., Chicago 48.)

INSTRUMENT APPLICATION MANUAL. Manual D-62, "Methods and Instruments for Maintenance of Generators, Motors, and Power Equipment," describes maintenance and inspection practices to foretell and prevent failure for many different types of electrical industrial equipment. (Write: *Associated Research, Inc.*, Dept. RLC, 3777 W. Belmont ave., Chicago 18.)

HOISTS. 8-page catalog 600 contains specification tables for all Coffing hoist models in lever, power (electric and air) and hand-chain basic industrial hoists, and specification tables for hoist accessories and I-beam trolley attachments. (Write: *Coffing Hoist Div., Duff-Norton Co.*, Dept. RLC, Gateway Four, Pittsburgh 22, Pa.)

AIR FILTERS. Bulletin on oil bath air filters for locomotive air compressors describes operation, construction and design features of heavy-duty air filters designed for use either on Westinghouse or Gardner-Denver locomotive compressors. (Write: *Railroad Sales Dept., Air-Maze Div., Rockwell-Standard*, Dept. RLC, 25000 Miles Road, Cleveland 28.)

CYLINDER AND LINER RECLAMATION. 4-page folder discusses Channelcromium method of reclaiming diesel cylinders and diesel engine liners, including application of controlled surface channels for lubrication. Sequence of major operations illustrated. (Write: *Pennington Channelcromium Co., a division of Electro-Coatings, Inc.*, Dept. RLC, 570 Northwest Highway, Des Plaines, Ill.

DRILLING AND TAPPING. Bulletin 765 describes proper procedures for drilling and tapping aluminum, steel, plastics, etc., to receive Heli-Coil inserts. Discusses tapping problems, their causes, and suggested remedies. (Write: *Heli-Coil Corp.*, Dept. RLC, Danbury, Conn.)

TORQUE-TENSION MANUAL. Manual No. 6101 includes tables listing specific recommended installation torque values for thin and standard height UNC and UNF hex type Elastic Stop nuts. Discusses selection of a tightening torque and effects of use of lubricants. (Write: *Elastic Stop Nut Corp.*, Dept. RLC, 2330 Vauxhall Road, Union, N.J.)

RIVETS. Bulletins TCY-160 and TCL-166 discuss use and advantages of Cherry commercial rivets and blind rivets, respectively. Include charts and specifications for aluminum, mild steel, and monel types. (Write: *Cherry Rivet Div., Townsend Co.*, Box 2157-Z, Santa Ana, Calif.)

HOSE ASSEMBLIES. Reference Bulletin IEB 53 a quick reference guide to Aeroquip hose assembly numbers. Covers various categories of end fittings (J.I.C. and S.A.E., etc.) (Write: *Aeroquip Corp.*, Dept. RLC, Jackson, Mich.)

Letter to the Editor

"Calamity or Opportunity"

TO THE EDITOR:

Your editorial, "Calamity or Opportunity," in the February issue of RL&C was read with great interest.

What your editorial disclosed was disappointing to one whose connection with electrical matters on railroads began in the days of the Association of Railway Car Lighting Engineers. In 1910 this group became the Association of Railway Electrical Engineers. The early-day members of these groups had but one purpose in forming such associations. They recognized that no one person, or small group of persons, had a corner on brains or ideas. These pioneers felt that the regular meeting of the members for the exchange of ideas and the pooling of information would benefit all members and the roads they represented.

It had been pretty much an uphill fight, and what your editorial discloses indicates the way is not being smoothed for those who seek to make electrical equipment and devices an efficient aid to all departments.

You state, "It is logical for a man who has come up through the mechanical department to think in terms of things mechanical . . ." As an electrical member of a mechanical department, I know how right you are. Later you say, "Somewhat similarly, electrical men are inclined to tout electrical means and equipment to the exclusion of other means . . ." Human nature being what it is, I can agree with that statement also.

What is needed is an umpire in such matters. The umpire should be someone whose background is neither mechanical nor electrical. As things are now set up, many, or most, electrical supervisors report to a mechanical department head. The chance of electrical recomendations being adopted are largely restricted to the limits of electrical knowledge of the mechanical supervisor. Sometimes it is a case of what a man is not "up" on he is down on.

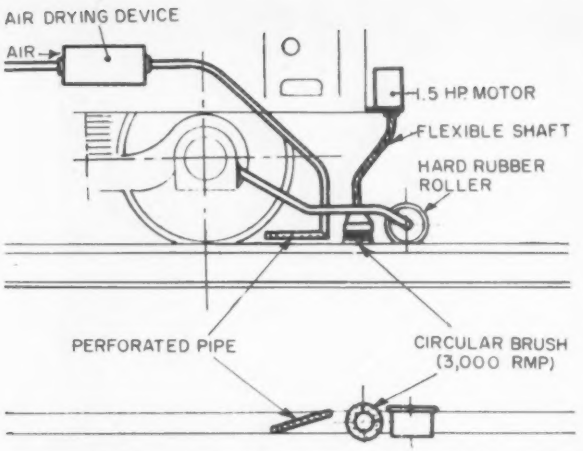
In all fairness, it is like trying to settle the question of "which is the most important leg on a three-legged stool." There can be but one answer; they are of equal importance. Each is necessary to the proper functioning of the organization of which they are a part.

Each department should be given equal opportunity to develop to the end that the contribution of each will bring about the safest, most efficient and economical way to operate a railroad.

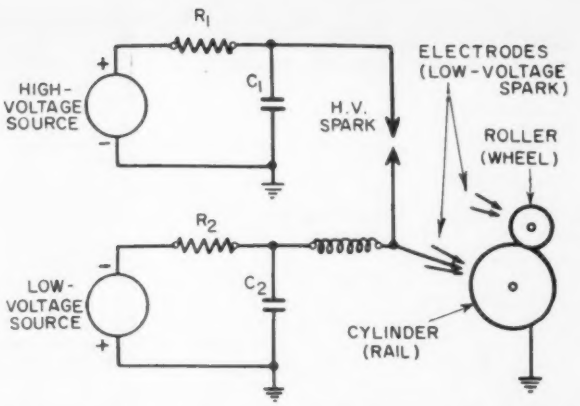
It is to be hoped that the AAR Electrical Section, or some equally representative group will be restored to a position from which it may function to its full ability. With one hand tied behind it in the past, it has come up with great things. Free its hands and the railroad industry will be greatly rewarded.

With all good wishes for railroads everywhere.

Guy Franklin



Mechanical brushing equipment is mounted on a frame which is lowered into its operating position as the locomotive encounters bad rail. Rolling, brushing, and air drying then take place as locomotive advances.



Sparking arrangement, shown schematically, is sequential with initial high-voltage discharge ionizing air gap and high current following. The diagram illustrates the laboratory arrangement which simulated the contact between wheel and rail. French National has now fitted a locomotive with comparable system and is conducting actual road tests.

Could Sparking Improve Adhesion?

French National Railways has made no decision but its work is now at the road-testing stage.

Research aimed at improving the adhesion characteristics of existing locomotives is being conducted by the French National Railways (SNCF—Societe Nationale des Chemins de Fer Francais). While there have been four different approaches to this problem over the past few years, M. Nouvion, chief engineer—electric traction, recently reported that "among the methods for improving wheel-rail adhesion, electric sparking seems to show the greatest promise." During 1961, SNCF locomotive BB 12043 will be operating experimentally with equipment which cleans the driving wheels and rails with electrical discharges. This has just been reported in *Revue Generale des Chemins de Fer*, technical publication of the SNCF.

In its earliest attempt to improve the adhesion characteristics of its locomotives, the French National first tried a series of different materials which were thought might prove more effective than sand. After extensive tests during the summer of 1957, it was concluded that no chemicals gave better results than sand and that in every case the application of chemical to the rail is more complicated than the application of sand.

Next phase of the program was improvements in the locomotive sanding systems. This resulted in the development of special nozzles to direct the sand stream more effectively into the contact area between the wheel and rail. This more efficient delivery, it was reported, made it possible to reduce the quantity of sand used and to eliminate some of the signal failures which result from excessive sanding. SNCF determined that its improved arrangement was most effective at low speeds and that sanding at high speeds would require extremely high sanding velocities.

Mechanical Cleaning

Mechanical cleaning of the rail ahead of the driving wheels was then investigated. A mechanism to do this would be mounted on a frame ahead of the locomotive truck and would drop into its operating position on the rail and begin to operate when a push button is operated in the cab. It is not intended that this arrangement would be operated continuously; instead, it would be started as the locomotive approached sections of line where wheel slip could be expected. There was no idea that this system would make bad rail into good rail, Mr. Nouvion reported. What was being attempted was to make it possible to operate over very bad rail without stalling.

A flanged, hard-rubber roller mounted on the frame initially passes over the rail, pushing standing moisture from the surface. This is followed by a metallic brush rotating about a vertical axis and driven by a high-speed electric motor. Wire brushing can remove surface contamination. Behind the brush a perforated pipe delivers dry air streams to the rail just ahead of the driving wheels, to remove traces of moisture. Air taken from the locomotive compressor is passed through a tank containing activated alumina which dehydrates the air before it is used to dry the rail. The device would be used at starting and at locomotive speeds up to 12.4 mph. It is reported that an earlier and somewhat less elaborate system installed on a locomotive shows good results.

The electric sparking arrangement, which has been rated "to show the greatest promise," has been subjected to extensive laboratory tests. Actual road tests were scheduled to be started only recently. This arrangement would not only destroy foreign materials which cover the rail surface but would remove gases which are absorbed by the surface metal and are claimed to impair adhesion

The laboratory set-up consisted of a roller simulating the wheel which is mounted on a lever and allowed to roll on a larger roller representing the

rail. This test set-up, made in the SNCF laboratory, reproduces the wheel-rail characteristics with respect to circumference, stress, and contact area. The roller representing the rail is motor driven and can be operated to reproduce speeds from zero to 93.2 mph. The levers make it possible to reproduce typical wheel loads. Coefficient of friction can be read directly.

After testing different arrangements, it was decided to adopt a sequential sparking arrangement in order to reduce the power requirements. An initial high voltage discharge, a "pilot" spark, passed between the electrodes and the "wheel" and "rail" serves to ionize the air in these two gaps. This makes it possible to follow this pilot spark with the discharge from a low voltage source.

Laboratory results have shown that the adhesion obtained between clean metal surfaces, normally 0.4, becomes 1.2 immediately after sparking. In another test, the two cylinders were oiled prior to sparking. The coefficient of between 0.1 and 0.2 was gradually increased with continuous sparking, to 1.2. In a test in which the two cylinders were oiled continuously and the sparking equipment operated steadily, the coefficient quickly stabilized at between 0.6 and 0.7.

All these results were obtained at a simulated speed of just under 2 mph. For higher speeds, the coefficient could not be improved to the same degree with the single electrode. It proved necessary to increase the number of electrodes to produce the high coefficients obtained during the low-speed tests.

After laboratory tests showed that it was possible to obtain a considerable increase in coefficient of adhesion, it was not only necessary to determine if this could be obtained in actual service, but also if rail and wheel wear or erosion might be greatly increased, or if the metal surfaces could be altered so that the wheels or rails could be subject to fatigue failures.

Initial Conclusions

While it was not possible to make final conclusions about this last question from the laboratory tests, some initial conclusions have been made. Thin steel bands were applied to the two cylinders representing the wheel and the rail. After sparking, these were removed and weighed to determine if there had been a loss of metal. They were also examined metallurgically to determine if the metal structure had been altered.

After tests, which corresponded to several thousand passages under the electrodes of the double sparking device, it was found that there had been no real modification of the metal structure. Metallography showed the surface was a thin layer of martensite and that, below this for a depth of 0.02 mm, was an aggregate of martensite, austenite, and pearlite. Microscopic examination of these bands showed that there had been no more tendency for them to develop surface cracks than there had been in bands not subject to sparking. There is apparently very little risk of wheel or rail rupture resulting from the sparking, Mr. Nouvion reports. Not only is the modified zone very thin, but, in the case both of the wheel and the rail, it is under the highest compression and away from the zones of maximum tensile stress.

Erosion and wear of the bands was determined by weighing them after considerable operation under conditions simulating development of maximum tractive effort. An unsparked band was found to lose 0.2 grams and the sparked band 0.3 grams. It was found that different types of electrodes cause some variation in this wear, but that there apparently is little relationship between wear and increased tractive effort. Based on its laboratory results, SNCF estimates that rail wear would be increased by only 20% under locomotives equipped with sparking equipment. Against this could be balanced the stress-relieving effect which sparking might have on the rail. This could mean that the wheels of the cars behind a locomotive equipped with sparking might do less damage to the track than is now the case.

It was concluded that "in practice, the increase in wheel and rail wear should be negligible for some operation." It will take some months to complete the series of tests scheduled on locomotive BB 12043. Several electrodes will be installed to treat the wheel treads and several more to prepare the rails immediately ahead of this driving axle.

Everyone Out of Step

(Continued from page 36)

"With everything else unchanged, the circuit sequence will then be 1-3, then 3-2, then 2-1. Phase 3 leads Phase 2, and Phase 2 leads Phase 1."

"Will the cables leading to the cabinet be marked T1, T2, and T3?" Fred asked.

"They will probably be marked L1, L2, and L3."

Fred got up into the car and shortly leaned out to report, "You were right, Pete. Cable L1 is connected to the terminal marked L2, and Cable L2 is connected to Terminal L1. That will be easy to change."

About this time Big Jim, the boss, walked up and asked what was wrong. It was explained briefly, and puzzled look came over his face. "Say, I wonder if that fits with information I got the other day. You fellows stop at the office."

A few minutes later when the two men came into the office, they could report that the car was cooling properly with the fans running in the right direction. Big Jim looked up from his desk. "I made a note the other day. I heard that one rather large group of cars was built with improper phase sequence. They are now being corrected. That could explain why someone's standby cable was wrong. They may have tested it initially on one of the improperly wired cars. This could have led them to the conclusion that the cable was properly wired. When they found a car that wouldn't work properly, then they falsely assumed that the car was improperly wired. Wonder how many cars' wiring they did change?"

Pete turned to Fred. "You see, there is some standardization and it is important. Do you suppose, Jim, that you could contact whoever makes this wiring change and stop him from making any more? It shouldn't be too hard, because we know where the car was last unloaded. That had to be where the wiring was changed, because the car could not have made a successful trip."

"OK, Pete; I'll see what I can do. By the way, by quitting time do you expect to finish that car you are working on?"

"Fred, your idea of a couple of minutes turned out to be a good many minutes. Now I'll really have to throw my feet out," Pete said as he turned and started out the door.

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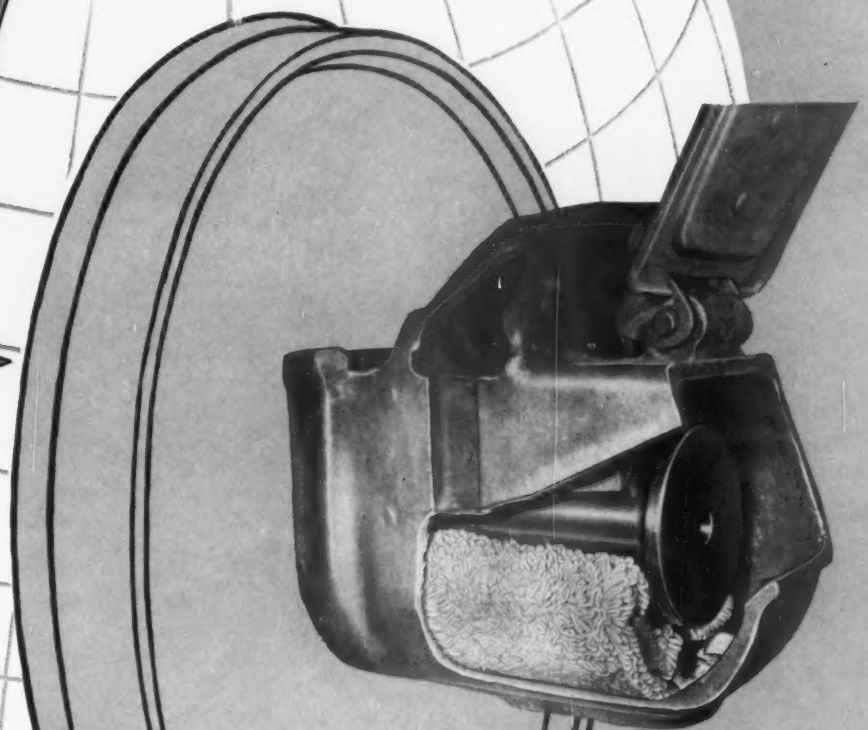

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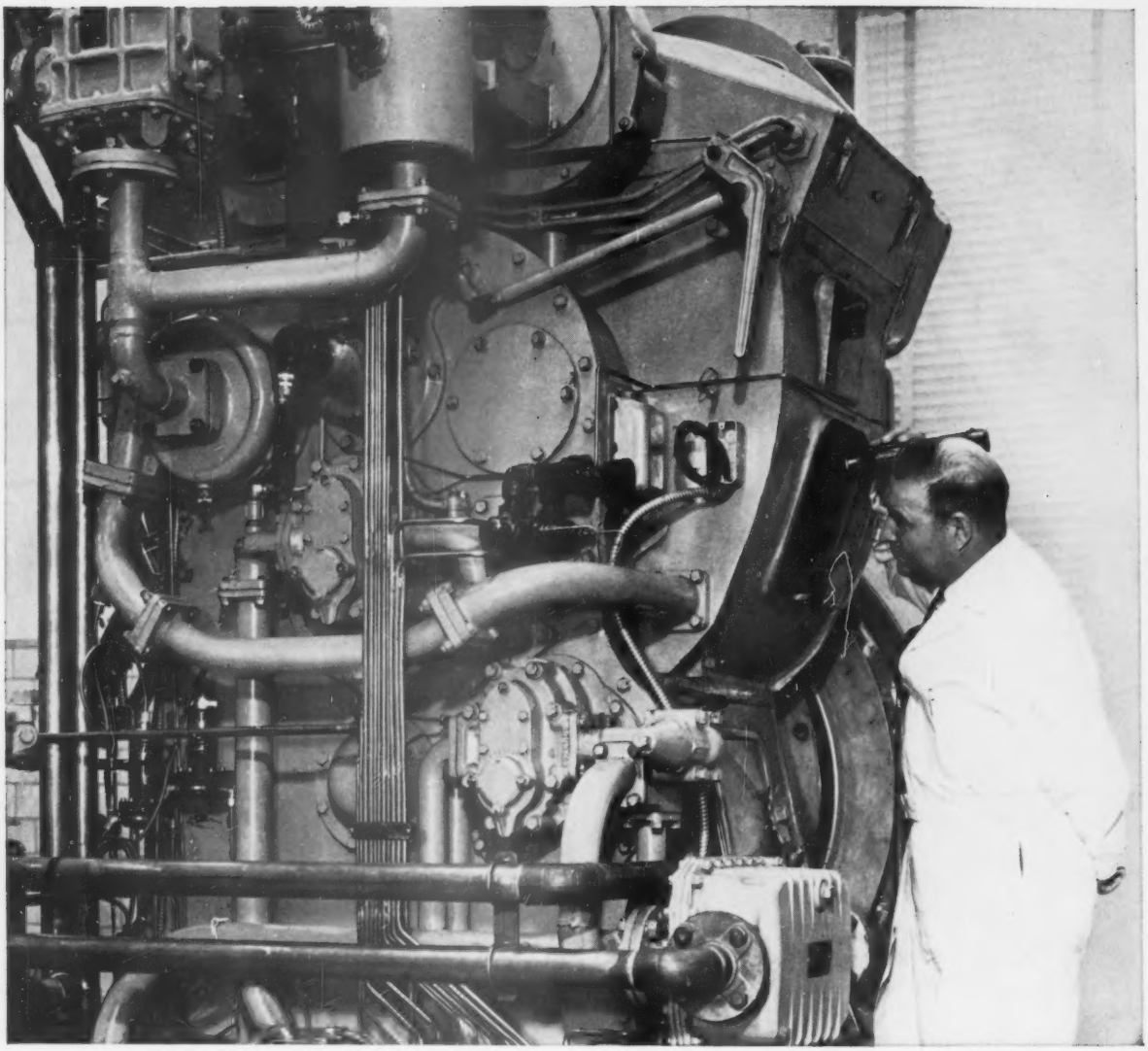

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